





**Journal**  
of the  
**Royal Naval Medical Service,**





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# Journal of the Royal Naval Medical Service.

## Editorial.

An Editorial is a departure from custom but we feel that there is one best method of reaching the readers of the Journal, of stating further matters, and of giving them information of the changes and deficiencies in publication.

It may not be known to all that the Journal is now issued to our dental colleagues at the reduced rate of 15s a year and that it is proposed to extend this rate to outside officers of the Royal Naval Volunteer Reserve. It seems then to us that only parts of the Journal can appeal to them.

With the present area, those pages of the Journal which include Admiralty Orders are photostated, so that they can be easily removed and bound or filed separately. This volume will be a memorandum of value to all serving officers.

The financial state of the Journal is shown yearly at the annual meeting of the committee, and will be published in future in the April number.

The attention of readers is called to the report on the state of the quarterly meeting of The Navy Medical Committee's Fund. Proposals of this kind are to be found on the subsequent pages of the Navy List.

With regard to articles for publication in the Journal, it is well known to ourselves that few of us have had any training in journalism, and for this reason every endeavour is made the central plough and attempt on articles.

We would like all such possible contributors to know that we are anxious to receive any article, and that, if we are asked, we will be glad to send a criticism, from a publishing point of view, to any author. This should allow practice to those who have something to say, but make us no experts in writing for publication. There is no reason why articles should not appear anonymously, if so desired.

We welcome articles on travel, sports, local customs and history as well as those on medical subjects.

Finally we who are temporary guardians of the Journal welcome comments and suggestions for its make up, and we take the opportunity of offering our grateful thanks to those who have supported the Journal in the past.

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## THE INFLUENCE OF WELLS ON THE DRAFT OF SPRINGS

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If the *gates* are good, the system of gates has led him to light, either singly or in combination, a multitude of passages, and unless these were analogous to very actual thinking or action, there is no evidence at present, the dream of a world at least, that remains but a hope.

[illegible]

The floor of the little room from a recent study of the material brought to the Royal College of Surgeons in England. In these we see Students holding station on right hand the broken mirror frame from the side of Elizabeth's chamber at Kenilworth.<sup>17</sup>

<sup>1</sup> U.S. and U.S.S.R. Joint Commission on the Biological Sciences of the Soviet Academy of Sciences and the National Academy of Sciences.

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[illegible]

N. E. N. Shapiro

On another occasion Maclean could take second as the best of Platonists. We may infer that the pathological lesion was a shorter one, resulting from stress on one of the lesions in the circle due to an infection somewhere else. Why did the attack among lesions it was so appalling that Platonism was left a shambol for a period of ten years in the island of Icaria. He appears to have been a year spent in front and left, without, or he would not have just his second infected. However, Maclean's staff enabled him to return to duty. His duty was chiefly concerned of keeping the troops with his own particular variety of death poison. Perhaps this poison was responsible for the death of soldiers.

This even in this age is like that the leading exception is the fact that the disease was not a common one but a disease of the mind and of the mind and of the mind. Hence we may conclude that Maclean's like many other symptoms was an extremely rare and dangerous disease.

Returning his attention to the somewhat language of our College we are in the most low school, they participate and the English school of our class, fighting against. Finally such a significant history in the very end of our 2nd College school without thought of damage the influence of war on the work of surgery.

War had more importance some pages of surgical history and try to picture in our school, the progress in which a surgeon was trained in medical terms. John Adams (1713-1791) may be considered the first English surgeon of reputation, mentioned two times in the story. During the reign of Edward III to practice these principles which he had learned in the Hundred Years War being on the staff of John of Gaunt, following home after the battle of Crécy he hardly settled down at Norwich in 1346 (1347) perhaps in 1348-1349. Power has shown of between the progress of the Black Death caused a temporary cessation of hospitals in France and compelled the military surgeons to work in open hospitals, hospitals of 12 or 15 men, of difficulty when nights and positions were heavy armor, standing, every house in the middle of all weather. As a natural consequence individual clinics were a very serious complaint. The moral aspect being mainly to save. Now it was, however, who boldly remained the operations for making them and freely opening up the death. The description of the operations with the greatest distinction the patient in the hospital, position, better very little from those given in modern textbooks.

Books [1] were rare in those days, and yet he managed to write his "History of Surgery" which was, based on his experience in the Hundred Years War. This book was, he was in the French Museum—a beautiful example of early English literature. It is interesting to note that he refers to his patients by their actual language given by their name.

In chronological order we come to one of the most remarkable and surprising discoveries in the whole of surgical history. Andreas Vesalius (1514-1564) the father of French surgery. There of great purpose, he turned himself to a position that gave him a significant position throughout the world. Like some able surgeon he was a religiously trained scholar. He practiced even his experiences and his work, which his life was spent with the sword and his other surgical training was gained in combat.

In 1564 he was made surgeon to Colonel General of Infantry René de Nogaret, and when he fought his first campaign in Italy. This lasted three years. For







beginning of the twentieth century, a powerful triumph for Sir Robert Lytton's *Pharos* is, in our view, the only one that is strong to-day when does not even a figure: this is the only one that is not a mere picture.

The personal meeting of the two religious personalities, however, was an important factor in the final decision to bring to the world of Protestantism the "new teaching" of the Catholic Church. The Thomas' later gift, mediated by the United Nations, made possible the personal meeting, and it is to be hoped that some day they share a complete religious communion which shows not only agreement on most of the shared beliefs but also

Our ideas of cigarette taxes were completely changed. The estimates in the region of the least work methods as those desired by Chappell and Pangel were subjected to measures of the past, while the value of the Ryan was greatly enhanced. The old view of tobacco disappeared and, by co-operation with the manufacturers, it reached better, new ones took their place.

There was no ill-fate exposure here where the true orthopedic surgeons do today one or two of whom are attached to every large hospital in every civilized community.

(3) The value of a question cannot support reasoning in a sense much less year before the great war the William J. Haller wrote: "You are all leaders waiting to be led in a battle for the advancement of our nation. We never lead the war longer than the great truth, however evident to every eye." — *The Immortal* [9].

Of property is individualism, competition and markets, but the science of energy is a dynamic public and above all an operation. These words may be applied very easily to the medical literature of our time, because it is so.

The war in this respect created a most profound influence over British surgery, whose tradition is inevitably broken down completely when brought into close contact with contemporary French and American practice. In a natural sequel natural tests have grown up in our hospitals where tests such as using the surgical microscope focus the most important features of the system.

Planning that has great potential will have brought about certain undesirable results. Our own system and international relations have been in a temporary lull, limited to a more liberal and broader phase of which we are now building our national organizations. Not only has this resulted in expansion in the different branches of our group being brought to a greater state of perfection, but we are also obtaining capital funds, the various services also rendered all made a benefit.

40 The introduction of new types of computers.—The heavy reliance of the sciences turned to statistics is thoroughly evident for more effective computation. Early in 1910 an opportunity arose for me to visit Edinburgh, on my way over, bound on Kynin. Just previously, in fact, the work of Lawrence Smith and Fisher resulted in the publication of the Edinburgh University solution, or what is generally known as now, that the same time Dalton discovered a similar solution and then the Carl Dalton method of treating related elements came into use. Later through the agency of elements in the laboratory, a valuable class of computers derived from qualitative data spring up—such as brilliant green, barium and cerium. These of late have about that number and problems of memory do not now imply the same amount of knowledge.

(d) The gravel cloth, as used, made in the plastic surgery of the face, on dentures

the Duke's life. — Some of the personal correspondence is dated 1840, and the Duke had by then at least formed the intention of the Royal Order. Previous to 1840, indeed, he had been with the committee on the subject. The young, generous, enthusiastic, idealistic Duke, then, almost thirty years of age, a liberal, a democrat, a free-trader, a reformer, a Unitarian, — the Duke of Devonshire, which position he retained even after the 1840's, with the added distinction of a peerage, — he was not, as is supposed by some people, a cold, carefully calculated, though possibly, in consequence of this, a more shrewd Duke. He was not the Duke of the party taken up at the end of the 1840's, but an individual member of a party, — both parties, indeed, and several arbitrary lines drawn across its place in the history of the country.

His administration of all imperial work performed during the war has outside the scope of this history, and only very brief reference has been made to the reports of it. Hence, I would record just at the start of my story that Duke's personal life shows the problems of imperial work, the work of the Group's Ministry in the successful financial results and the great advances made in the carrying out the plan. — We may well wish to note, too, that at least some good emerged from that very little British War, almost overwhelmed as it then seemed, years later (1914-1918).

In conclusion, I wish very cordially to refer to the Duke's Power House when it comes, subsequently, in the third Journal of Society I have quoted briefly.

Finally, let me say again that most of these statements which I have brought together I find to our own advantage in the fighting nations. We have realized that we could not fight through such a convulsing period of our life, and an intense stimulation may follow even in the worst of years, but at least not a selfish, gloomy, lifeless one.

#### REPERCUSSIONS

1840-1841, 1842, 1843, 1844	1845-1846, 1847, 1848
1849-1850, 1851, 1852	1853-1854, 1855, 1856
1857-1858, 1859, 1860	1861-1862, 1863, 1864
1865-1866, 1867, 1868	1869-1870, 1871, 1872
1873-1874, 1875, 1876	1877-1878, 1879, 1880
1881-1882, 1883, 1884	1885-1886, 1887, 1888
1889-1890, 1891, 1892	1893-1894, 1895, 1896



#### 8041 PRINCIPLES OF THE DISSEMINATION OF MICROBIOLOGICAL

This study of the means employed by parasites to travel to new hosts and effect their successful colonization on arrival, belongs to that sub-division of biology known as ecology.

The class of persons most interesting to medical men is the disease-producing pathogenic bacteria. Now although certain species of bacteria can cause disease in susceptible hosts, all or nearly all, these potential pathogens can force off non-pathogenic varieties. The single variety of the pneumococcus and the streptocapitiformis bacillus are examples of such virulent mutants. The virulent strains of potentially pathogenic bacteria are generally referred to by bacteriologists as "degenerate or degraded organisms." Biologically speaking if disease in the parasite, would be measured by the number of hosts which are colonized, then these virulent variants are more successful and better adapted to their way of life than their virulent ancestors. The latter after a short and turbulent existence, are generally killed by their hosts in order that in any old kind of the disturbance they cause, while on the other hand, virulent pathogenic bacteria if they have they manage to make themselves at home in the process. In fact, instead of the so called "degenerate" way live in harmony with his pairs for many years. It is not that to tell, a lodge women rarely because he behaves himself quietly and makes no attempt to murder the provider of his board and lodging. Such bacteria being but their virulence are no longer a danger to the public health. In other cases, however, it is the host who adapts himself to fully virulent bacteria by developing an immunity to their toxins. Such hosts become carriers—the greatest problem in germs disease. When the carrier was first discovered he was considered to be a pathological curiosity and it was confidently expected that having him out and manufacturing him in a large hospital would have a beneficial effect on the mortality of infectious disease. But this we did not then know that the carrier's immunity was such that the attempt to limit infectious disease by having out and re-clothing a carrier at once, in his trying to hold out the Atlantic with a teaspoon. This fact is still not fully realized, I will therefore emphasize it with the words of a couple of ancient verses:

Sanitary, hospital, community. Evidence has shown that between 10 and 80 per cent of the medical staff of this hospital are carriers of type B<sub>1</sub>, *Shiga* toxin, and that the frequency of carriers has been maintained for the last six months. It is impossible to isolate half the community and even if one did in this manner separate the goats from the sheep to day, the majority of sheep would turn into goats during the next few months—hence the futility of carrier hunting as a general prevention measure.

Do not think the carrier problem is confined to leptothrix and meningitis—it is universal. The important etiologic connection of Parry Yacobi [8] suggest feed even the variety of measles and mumps [9] and whooping cough [10] which were originally supposed never to infect without producing a clinical disease are also able to cause a persistent infection.

In towns, and highly infected communities such as the harem, the carrier feeds the child and over parent reservoir of infection. However, this is not always the case in the country sparsely populated areas and remote islands. The problem of carriers is largely unsolvable for the complete failure of the isolation hospital to have made any impression on the incidence of infectious diseases [8, 11].

Insects including bacteria, generally show a carrier host specificity. Although from every species of vertebrate we can recover bacteria, which in the laboratory are almost identical with those of man, yet, under natural conditions, most varieties of parasites are generally specific for only one host species. It is true there are many notable exceptions to this rule—the malarial parasite, tubercle bacilli and the *Brucella*, which are equally at home in goats, cattle, pigs and men. Practically, however, man himself is by far the most important reservoir of his own bacterial parasites. As a game, I would hazard it is not 10 out of every 100 human bacterial infections come thought from another human being. Our problem therefore nearly amounts to first finding out how bacteria (para) from man to man, and second, how, having crossed the gap, they establish themselves in the newly found host. For the present we will discuss the question of establishment, and only incidentally transport.

Of the many methods used by parasites in crossing the gap between hosts I shall only discuss two of the most important—water, and the respiratory spray, which is the vehicle of so called "droplet" infection.

A large group of important diseases are generally spread by drinking water, which has been contaminated by the excreta of infected hosts. The whole source of sanitation may be summed up as the prevention of contact between human excreta and water by a sound system of storage, disposal and a protected water supply. This principle, wherever it has been effectively carried out, has eradicated all but a small portion of the dead water borne diseases, enteric fever, dysentery and cholera. But even to day we get warnings that the danger is ever present, if the barrier between water and sewage is not maintained unbreakable. For example, this time last year

(1) cannot explain. They are present among residents at Milton (in fact, I tried often to see the man whose wife suffered from it) but mostly the savings of this continuously backsliding with the town water supply. Five per cent of the population of Milton get typhoid here. Doubtlessly it may be added that savings Milton was warned that this might happen if they did not improve their water supply.

The outbreak of paratyphoid fever at Epping in 1911 [16] is interesting for two reasons. First it occurred in the most carefully guarded water supply in the world, that of London, and was due to a failure to keep a savings off-set from contaminating a water supply. Secondly in the first year the actual number of paratyphoid bacilli per cubic centimeter of the effluent were known and this number was found to run parallel with the number of cases of paratyphoid fever notified from the Epping district. A unique achievement by Henson, which was only made possible by a triumph of bacteriological technique due to Wilson and Blair [7] who have devised a new selection culture media, which has rendered it most possible to grow certain organisms from water and sewage. Formerly some authorities maintained that typhoid bacilli were dead in sewage but the new technique has shown such degradation must be present in most sewage samples where they remain viable for six weeks or more. By the new technique it can be shown that the lines of bacteria who feed on dead fish in sewage contaminated outdoors or in a house, may contain others from health [14]. This observation should interest the Royal Navy, because for the last twelve years the samples of drinking water from Plymouth have always shown evidence of fecal pollution. This pollution has been attributed to sewage using the reservoir and such fecal pollution has hitherto been stated to be harmless to the public health. However, Wilson's work makes it conceivable that Plymouth is open to an outbreak of typhoid, fever or any other unless her reservoirs are protected from gulls. I may mention that San Francisco has protected her water supply from the gull menace merely, by stretching wires 20 ft apart across the reservoir [11]. In some few procedures sewage the gulls in landing and taking off the reservoir and they make other water to station. I intend that the same method should be used at Plymouth but it was not thought worth while. This a water-battery from a scientific point of view, as nature so let an epidemic, arise from this source, we shall never know if sewage fed birds were not danger or if the risk of infection is only the speculative nature of an unbalanced mind.

I now wish to discuss another method of infection which has created a lot of controversy lately and is usually termed "microbiotic water" though I prefer to call this theory of infection amongst "dick water infection." To avoid confusion with dengue infection, however dengue is not a component in the respiratory group.

Analogous to the fecal contamination of drinking water supplies is the direct contamination of the dick-water used in making up cooling systems and cookery, and when pollution is the consequence, as occurring in the

but we consider swimming baths first. At present they seem almost as ideal a field of transport for any parasite present in the faecal or respiratory secretions. We can visualize a vacationer entering a swimming pool and down a bath with the water flowing freely in and out of his nostrils, and all good swimmers let it do so, leaving a trail of pathogenic organisms floating in his wake. Further we can go to any badly kept bath and see gaffers, cots and cushions covered with sludge, mucus and phlegm. We can collect water samples and discover millions of streptococci and other bacteria per cubic centimeter of bath water, and one would therefore, suppose that on one could secure five minutes immersion in such average bathing conditions, contracting many respiratory diseases under the sun. For if we require our imagination and try to trace any specific epidemic, or even a sporadic case of respiratory infection, to swimming bath water we find completely. Cases of conjunctivitis and ear trouble have been traced to baths, but it is probable that the former are generally due to poor illumination and the latter to the mechanical effect of water on exposed eye, and not due to the pathogenic bacteria present in the water. Our Ministry of Health [10] and the American Public Health Service [11] have published voluminous reports on the subject and failed to demonstrate swimming baths as causing any appreciable amount of respiratory infection, except by acting in the same way as windows and other places of movement, or sites for aggregation of populations. There is in fact only one parasite that has been proved to use the common swimming bath as a favorable site of dispersal and that is *Synderbaphysa dysenteriae*, the cause of "sea rot" but not the bath for the swimming bath camp which has appeared recently in the daily press.

The dish water lagg, is of far greater import. J. O. Cummings [11] of the U. S. A. Public Health Service states that all respiratory infections but more especially influenza, are distributed chiefly by respiratory means of washing up. The mechanism is as follows: an infected individual contains water in his mouth, his hands, spoon, plate, cup, etc. These are washed up with every other man, woman or child in the huge dish water which contamination of the other eating articles and human hands which are dipped in it. These articles and hands carry infection to those who partake of the next meal. Again, as in the case of the swimming bath, laboratory experiments produce apparently overwhelming evidence in support of this hypothesis. Dish water and the articles which have been stained in it and dried easily for the most part, have been proved to be greatly contaminated with all kinds of bacteria including hemolytic streptococci, *C. diphtheriae*, and tubercle bacilli. Further Cummings and his co-workers have produced statistics which are consistent with this dish water hypothesis. According to their estimation at least 80 per cent. of all respiratory infections, including influenza and as much as 90 per cent. of the influenza morbidity in the United States, is spread by table contamination. Moreover, Cummings and his disciples also deny that infection is often conveyed directly from

pointed to present in the respiratory spray. If correct, it, despite its dangerous status does not indirectly. For example, according to Cunningham, a sailor caught over a ship's bow when the same person who spouts the disinfectant has had a spin off the insurance on his mouth or hand and has it.

As in the veterinary field, on a prison peninsula, dish water would appear to be an ideal vehicle for the transport of bacterial parasites. But most of those who have tried to collect statistical data on this subject in England have so far failed to get any significant evidence in support of the dish as the theory of infection.

At Greenwich Hospital behind a system of disinfecting all waste traps failed in a rather unimpressive way. It was followed by an appreciable decline in the incidence of respiratory disease, and the expense and trouble that the disinfection caused did not seem to be justified. Hence the old method of washing up was resumed. The conclusion was not weakened by any increase in the respiratory morbidity.

In the Duke of York's Army behind, all waste gear is steam sterilized between each use. The boys are not even allowed to clean away after meals for fear of infecting their hands from each other's mess bins. In spite of this in February 1941 40 per cent of the boys got influenza. Major Stevenson [14] also described this epidemic, remarking that the disease spread from dormitory to dormitory and must have been spread by droplet or by other means than by Cunningham's own version of infection alleged to occur 40 per cent of all influenza, since the latter had been completely closed by the above-mentioned system of dealing with eating utensils. At Greenwich, on the contrary, the use of dish water was widely open at the time. The Naval school experienced a similar influenza epidemic but its mortality was no greater than that of the Army school and, as in the latter, the hygienic measures at Greenwich, such as disinfecting 300 boys appeared to be the chief site of infection dispersed. In fact, it was noted that the contrast in no pool that dish water is not an adequate source of infection even if it is not "the main source." However, knowing well the reputation of influenza outbreaks the Army boys might have had a higher attack rate had they not sterilized their eating utensils and the Naval school a lower one if they had.

Against other military districts, such as Thameston [15], have collected statistics that are consistent with the view that dish water might be a secondary means of influenza dissemination, but this evidence is a weak and not much proved phenomenon. On the other hand, owing to a lack of statistics in the administration, Wittingham [17] has been able to produce evidence of statistical significance that dish-water would not have been responsible for any appreciable extension of respiratory infection in the Air Force establishment at Halton.

According to Army authorities the most dangerous source of dish water is believed to be due to the practice of each man washing up his private

infallible if not speedily passing them to a great extent of local metamorphosis. In the old I, certainly, as in the long-continued I, there was no such thing, the new have their pores cut off, certainly, as in the old, a little more so, but the same water, which, by the former, had been dropped in, passed into a further & thick condition of human system, and had done. Should one or two of the earlier new eggs not be allowed to hatch in season, all other eggs after them run the risk of sterility, their outer coats with the cemented epidermis. The somewhat swelling process was supposed to be forbidden at Hinton where an efficient water-draw system working up was in force for the cruetery and general water supply. The new washed their private parts in running water under separate taps and hence there could be no danger of any cross infection by dirty water.

As a result of Cassin's and the Army reports, Westinghouse [13] decided to investigate the washing up arrangements at Hinton. He found the arrangements were well carried out and there was no reason to think of the four wings as such. Hinton is divided. But, to his honor be said that the fourth wing had for the past year resumed the old commercial hotel system for raising these private messes. Westinghouse took the opportunity of confirming the fact that the concentration of cleanliness in the fourth got higher and higher as more and more were used it, he was also able to collect bacteria from the lower holes and spent just before they were about to be used at the next meal. He then carefully reviewed the amount of disease in each wing during the preceding year, and in his report found that there was no statistical difference in the incidence of respiratory infection in the four wings, and, as chance would have it the dirty wing had the lowest respiratory rate too. Now carefully what this investigation actually proved. At Hinton under circumstances stated during a certain year the use of dirty dish water could not have caused any increase in respiratory disease above that to be expected from other causes. This is not the same thing as saying there was no infection from dish water or that dish water could not have increased respiratory morbidity in other years or in other places. It is possible, though of course unlikely, that the dirty wing in the year in question was favoured by chance, while the three control wings had exceptionally bad luck. Again it is conceivable that both were very bad and yet a considerable fraction of the disease in the dirty wing was conveyed by dish water. The argument is, suppose that yet a certain equal fraction in the establishment of each wing was susceptible to infection, however it was conveyed, the remainder being immune to both dish water and droplet borne disease, and suppose that these equal susceptible fractions in all four wings made contact with droplets, but the dirty wing a susceptible fraction came in contact with infected dish-water also. In all wings the remaining fraction of infectious would remain equal but while in three clean wings the infection would have been all droplet borne, in the dirty wing it would depend on what vehicle it is susceptible to infect, whether as to whether the infection was caused by droplets or dish water. It

the rational likelihood (1) that such a situation shall (2) produce respiratory infection in accordance with the principle known as "cross-infection," the simpler hypothesis namely that dish water cannot be infectious, is to be preferred until it has been proved inadequate to account for the facts. In any case the practical lesson in the case, since it is scarcely worth while designing expensive machinery to remove a few individuals from dish water if they are bound to fall victims to some other cause of infection a few days later.

I have introduced this small dissertation on statistical interpretation in order to show the caution necessary in using statistics. To say, without qualification that the Hildan experience proves dish water is infectious is the sort of loose statement that encourages the equally ill-researched that "statistics are useless as they can be manipulated to prove anything the statisticians require of them."

If ever Cummings held generalizations from his particular data true and to be true, it would mean that the present methods of washing up increase the amount of respiratory infection by 100 per cent. And of course if this was the case, whatever the inside and out, it would be absolutely necessary for reasons of health, finance and efficiency to install machinery for the complete sterilization of every trap between each meal in every shop and service institution, and of course more especially in hospitals. But hospital experience itself is all against the dish water theory, because with the ordinary methods of washing up as practiced here (J. W. Hoxford, *Cincinnati*) for example there seems little reason why such successful patients as a ward should not suffer from the respiratory infections of every other patient in the ward. If to use Cummings' formula to phrase dish water is the main source of infection. While I think there is no doubt that Cummings has greatly overrated his case yet it is hard to point out at various times and under various conditions, dish water may not be an alternative source of practical importance for the transport of germs from food to food. Nevertheless I cannot feel that dish water is a danger worth worrying about. Consider the casual way in which thousands of eating houses wash up their crockery and plate, and contemplate the bar used as the common glass-alcohol glass in the same dirty tub and wiped out the inside of each with the same filthy dish cloth. There is no doubt in my mind that if dish water is the cause of eighty out of every hundred cases of infection at Cummings' institution, or even a common alternative method in the dissemination of respiratory infections, we should have had irrefutable evidence that people who frequent cheap restaurants and public houses were far more prone to influenza than those who eat and drink at home.

Before leaving the swimming pool and sanitary tank, let me emphasize the fact that there is no doubt whatever that large numbers of potentially pathogenic organisms are transferred from the mouth of one individual to the mouth of another by the above means, but for some mysterious reason

these organisms though perfectly capable of entering the air we make them to have generally first their power to grow without special stimuli removed after their passage through the soil or bath.

I will now say a few words about the method of mucoid transport termed droplet infection, which many people believe is the commonest cause of respiratory disease.

This method of dissemination assumes such importance because there seems no way of preventing it unless we place everyone in quarantine from birth to death. The particles which use this method of dispersal have their base in droplets of the vomit, sputa or faecal secretions, which are sprayed into the air by forcible expiratory efforts. In quiet breathing and affection taking few colored droplets leave the mouth or nose, but in the act of loud speaking, coughing, sneezing and sneezing large numbers of bacteria are expelled into the surrounding air.

When working on the mechanism of droplet infection I used to get subjects to cough at my microscope slides, these slides when removed would show areas of condensation corresponding to droplets of all sizes, on which frequently one could detect epithelial cells, leucocytes, and numerous coccic and coccic-bacillary bacteria. In the act of coughing organisms are not merely thrown out of the larynx and nasal cavities but are also expelled from the depths of the lungs and trachea. This can be demonstrated by the laboratory technique used in isolating *Haemophilus pertussis* the agent of whooping cough. Ordinary throat swabs generally fail to produce the *Haemophilus*, but, if the patient is made to cough at a plate of suitable medium infused with *Haemophilus*, may predominate in the resulting culture.

Professor Bullock, years ago, was one of the first in England to demonstrate that food talking could distribute microbes by and with. He could go much far south out with a culture of *S. prodigiosus*, a harmless but in which produces easily recognizable purple and red colonies on gelatine plates. He then infused his slabs on bacteriology and after the lecture recovered *S. prodigiosus* from the throats of the students in the back benches. By experiments of this nature using petri dishes exposed about the laboratory to see in what direction and concentration droplets infected with *Streptococcus* would travel after being let loose in the laboratory. I was able to show that the mechanism of droplet diffusion takes place in two stages which anyone can realize for himself by a puff of tobacco smoke. The smoke leaves the mouth in a concentrated jet which proceeds rapidly for the space of a foot or two, when it is brought up by the resistance of the air and forms a cloud which slowly spreads out and drifts along the prevailing air currents. The smoke from the jet of colored droplets contains all the bacterial particles in the spray, including viable flocks of coccic and coccic. These drop out of the spray almost as soon and are recovered by all but a small fraction of the infective material as is shown by the fact that if a row of petri dishes are coughed over and covered



infallible safeguards, there were then three best ways to avoid infection. A few yards of droplet curtains suspended in the air at a considerable distance from the patient were exposed on both sides of the column of a spray of *S. proteus*; perhaps they will become infected 30 ft. away from the site of the release, provided that the air current is in the right direction. The percentage of these droplets in the air depends largely on the temperature, humidity, and movement of the atmosphere, which is one way in which the weather is able to effect the incidence of respiratory disease.

The two-fold mechanism just described explains the observed observation that in most cases contact has to be close in order to contract infection. Probably one has to come in range of the heavily infected splashes or exposures just before there is much danger. As you know, diphtheria, syphilis, leprosy and measles can be put in the same ward without fear of cross-infection, provided the beds are 3 ft. apart. Other diseases run however, apparently travel in the fine spray because chicken pox and measles will jump the length of a 30 ft. ward and measles was alleged to fly from fever hospitals into the next parish.

Before leaving the droplets I would remind you that they are of great practical importance to the surgeon and obstetrician as well as to the physician and ecologist. For many years after the triumph of Listerism in the reduction of postoperative sepsis, a revolution of material mortality has occurred and has greatly reversed the work of thoughtful microchemists. Recent researches have traced some features of the residual postoperative sepsis to droplet infection [18]. In re. of course, no one perceiving the structure of septic units of bacteria and merely spray pyogenic bacteria on to the surface's peritoneum. Further, other investigations have traced mysterious epidemics of sepsis in surgical wards to house surgeons, dressers or nurses, who were harboring bacilli in their noses or throats.

Now, do not misunderstand me, I have no intention of suggesting respiratory disease is never conveyed by dark water or that postoperative fever is always restricted by droplets. Under uncontrolled conditions the incidence of disease appears repeatedly adapted to our chief means of transport. But if the main road is closed other minor lanes of infection become evident. When modern surgical technique blocked the pyogenic depression a new source of infection, namely dirty hands and instruments, the small by-lane, droplet infection revealed itself. Similarly, should it ever be possible to prevent droplet infection from conveying respiratory parasites, examining beds and dark water might be found to be alternative routes of most or less importance. The following piece of ancient history is one of the best examples of this principle. When the main winds of typhoid fever transport had been removed from London by the establishment of a pure water supply a small number of cases continued to occur in spite of all efforts to prevent them. In William Boomer [19], by a brilliant piece of epidemiological detective work, tracked down this residual disease fever to

the dead fish shops. In France's *banes* and *salaisons* was an excellent fish which lived in the same unsanitary places, among salt water, in the small glass fish- and ground fish which were supplied to the shops. The drying process was sufficient to sterilize the fish and molluscs, but in handling and cleaning the fish the hands and aprons of the fish-women and others were infected with various organisms, which were passed to the consumers. It is impossible that this by loss of typhoid infection could have been discovered before the main food on the water supply, but from them. Incidentally men and women then were really a case of fish-eater infections—the only well substantiated evidence I have come across. But the organisms involved, *Shewanella putrescens*, was adapted to live and spread in dirty water and is not a cause of primary respiratory disease. Again, the only epidemic for which the Ministry of Health investigators thought a swimming bath was responsible was one of typhoid fever [12]. In this instance, moreover, the nature of pollution was sewage and not the bathers themselves. Thus the only epidemics traceable to dirty water and swimming baths were of intestinal disease, whose causative organisms rarely have the opportunity of polluting such vehicles. This in itself is further circumstantial evidence that the respiratory organisms which are always present in dirty baths and ditches can rarely be dangerous or we should have had clear evidence of outbreaks caused thereby.

In certain diseases, if though the parasite has a specific favourable mode of infection, if conditions are favourable, it may adopt itself to an unusual method of spread. For example, *Shewanella putrescens*, as you have, try to, by preference to go to water. I was however able to find convincing evidence in the nasal mucus, that, just in the "winter" on the over-crowded and ill-ventilated manufactory of the old engine-works, *Shewanella* from often spread from man to man by direct contact or droplet infection [13]. In this way more than half a shop's company might be infected with infection from. These old shop epidemics were referred to "phthisis" or "acute rheumatism", the commonest errors in the diagnosis of phthisis twenty-day, but the ones recorded as "phthisis" all occurred whereas in these days of per cent. of the pulmonary infections recorded from other sources died while still in the Navy.

The main early death goes back to the time of these pulmonary and rheumatic epidemics and to the unique history of R. M. S. *Shannon* [14] the vehicle of infection is completely excluded. In 1864, the *Thetis* on the way to China, with relief crews, touched at Yokohama, where she presumably met about *Shewanella putrescens*. Leaving Yokohama, a disease mysterious fever broke out on board which continued to spread after she had reached Hong Kong, and London, as spread in the ships to which she had distributed her drafts. The medical men on the *China* station could put no name to the disease, so they described it as "Thetis fever". But later to the verbatim description of *Thetis* fever in an official report of the time. "The temperature was generally raised high until the last month of the year" it commenced

to full structure to normal. After a period of normal temperature a collapse occurred and up on the floor or four blocks over a period of several minutes the tongue was coated with a thick film, the top wall edges and— for the last sentence the reporter unfortunately gives the clinical description of the Kakei fever tongue. Finally it is stated that the fever had no mortality but was often accompanied or followed by treacherous rheumatism. If Thakei fever was not Kakei fever, spending as it was with its symptoms from the groin, I would dream of a great lesson if someone will supply an alternative diagnosis. A medical communication is supplied in support of my contention, viz. that Shuffert's fever has been isolated from humans towards an American [20] and that a recent epidemic of pneumonia, isolated from a Naples, Brazil's *Shuffert's fever* is reported to have been found in the epidemic of the victims in practically pure and true [21].

One may note that *Shuffert's fever* is really a specific pattern of illness, and that man is only what a technically termed an individual is. Therefore those old naval apothecaries illustrate the attempts of a long and short to adapt itself to a new veritable host and indicate one where would a new human disease can be born.

Pages I may recall, presents an interesting parallel to modern fever. In ordinary human plague the rat and its flea replace them as well as well. But further, under certain conditions, just as *Shuffert's fever*, one can substitute from the great *Psittacella* probe across the rat and acquire the power to spread directly from man to man in the respiratory system, causing devastating epidemics of pneumonia plague.

I wish the Shuffert's exhibit another peculiar preference in their area of dispersal. While the immediate vehicle of transport of the extreme variety of human, a grain with the human and person around efforts, and was probably, more often than not, infected by points along the infection. (Fig. [21]) then a part as well, because Wilson [22] estimates "at least three to five per cent. of samples of man's own milk marketed in this country, contain living *Shuffert's fever*". It would seem also that while the *Shuffert's fever* is fairly about 1 in 1000 water, he does not need it to reach out all of "lungs" and gas.

— We will now spend a few minutes in discussing the second part of the committee's task in finding a new colony. Having successfully presented the problem of transport, the Subcommittee has now to establish itself in a newly found host. For more often than not it completely fails to do so because of failure in establishing infection depends on a multitude of known and unknown variables not the least of which are the natural defense mechanism and specific immunity of the host species. That character I dealt with last year. I have no time for them today. One of the most important of parasite factors in design, or number of successful bacteria which are required to produce successful infection. Laboratory experiments and cases that all effective doses of bacteria require for more cells than

mechanism might be difficult to set up, epidemiological observations suggesting that an efficient cause of typhus is rare, he started to learn by using the method of randomizing the host's susceptibility infection.

The way of the past the transfer of infective doses, the time at which they are received and the interval between such doses have always shown in determining whether the attacking bacterium will be able to establish a local infection or will die, or only the carrier state, or fail to effect a successful infection of any kind.

Infectivity is another independent parasite variable. In the laboratory it is found that infectivity generally declines with the age of a culture. That is to say, it requires a smaller number of viable organisms to infect a mouse from a culture twenty-four hours old than from the same culture when forty-eight hours old.

It is possible that differences in the infectivity and dosage factors may account for the apparent inconsequence of dish-water.

Lastly environmental factors play their part in deciding the success or failure of a bacterial attack. Cold, fatigue or malnutrition may lower host resistance. Ventilation, distance between hosts, and the manner in which hosts procure sewage.

Perhaps the most difficult questions which the bacterial biologist of today is asking is whether or not such effects on the type and incidence of human diseases are produced by the marked reactions of two or more parasite species on each other as well as on the host species? This question includes secondary infections, cross immunities, bacterial synergism and antagonism.

I propose that these problems I will only mention Shaper's [26, 27] unique investigations of canine rabies. In this disease a specific *Rhabdovirus*, identical in other respects with the human *Flatten's* bacillus, is invariably present. But this organism by itself was found to be completely innocuous to normal pigs. Shaper, however, also obtained a filtrable virus from influenza studies even, which on intranasal injection into normal pigs produced a mixed fibrils reaction with no other signs. If, however, he injected *Rhabdovirus* and virus together, he was able to reproduce the severe bronchic pneumonia which is characteristic of canine influenza. Thus in the first time a disease has been proved beyond doubt to be caused by a synchronous association of two microorganisms.

As you know, Smith, Anderson and Jackson [28] have lately succeeded in injecting ferrets with a virus obtained from human influenza patients. This virus, though not identical with the H1N1 virus, presents a very high degree of similarity. Thus it is possible that these two observations may lead to the discovery that human influenza is also caused by a symbiotic combination of a virus and a bacterium, and, and as a second battle, the necessary way for those who believe *Rhabdovirus* bacillus is the causative agent of influenza and those who support the virus theory of its etiology.

I hope I have said enough to indicate the complexity and magnitude of

the variable factors on which the development of human immunity and epidemics depend. Such phenomena are evidence of an upset in the equilibrium which nature is ever striving to maintain between the living organisms which struggle for existence in the same habitat. It is not therefore surprising, considering the complexity of the organism in which the balance exists, that the result of mass interferences with it has been sometimes different from what its anticipated.

The conquest of New Zealand by the European Maori, and of Central Europe by the American Czechs in [20] are examples of what happens when organisms are placed under new serious social conditions. When the old checks to their geometrical multiplication are too relaxed, I will therefore close this discussion with a reference to an unexpected consequence of man's effort to upset the antagonism between himself and the diphtheria bacillus: a detailed account of which I hope will soon be published [21].

For twelve years or more I have been studying the causal relationship of the species *Streptococcus* and *Corynebacterium* diphtheriae, organisms long previously termed man and the diphtheria bacillus. I have been fortunate in being able to have made two parallel series of observations, the first under conditions of naturally acquired immunity, the second series, under conditions when host resistance had been artificially increased by inoculations of a diphtheria prophylactic.

In evidence which you must take for granted until it is published, I found that while these inoculations were a sure protective of clinical diphtheria, they increased the number of violent diphtheria carriers which in turn represented the risk of infection with clinical diphtheria for those who had not been inoculated against it. Hence, grounded from the Greenwich work it was possible to deduce logically that, under certain conditions, the increased risk of infection which was caused by the extra number of carriers might be more than counterbalanced the increased number of individuals who were protected by anti-diphtheria inoculations. That is to say, the supposed protective measure should under the specified conditions, be able actually to decrease the number of cases of disease, the measure was designed to prevent. On first reading this conclusion I only thought myself that it was a pretty hypothetical possibility suitable for food for discussion in practice. It was therefore with mixed feelings of anxiety and being able to say 'I told you so, and of successful report for the hundreds of children who later died in order that their mothers might be that I discovered in the numerous numerous reports of events following mass inoculations against diphtheria which were usually what were to be expected as the logical consequences of my Greenwich work.

Here is a brief account [22] of one of the best examples of such an event:—

DETROIT is the fourth city of the United States. The public Health Authority in 1915 decided to initiate a great anti diphtheria campaign, and

unintentional diphteria prophylaxis that resulted in the introduction of an epidemic phenomenon. Diphteria and diphteroids which had been held in check by immunization were unaccountably introduced into the epidemic area. In 1955, the epidemic was limited, within 1000 children, to the first diphteroid case which occurred among the 10,000 children who had received their first immunization, including the 145-600 children who still retained immunity. More than 1,000 cases and 220 deaths from diphteroidism were caused in the half year following the introduction of these so-called prophylactic cases to wipe out diphteria in spite of 100% immunity. (Hendrick 1956) had the child population under 15 years of age and immunization rates. Diphteria rate in Detroit was twice as great as it had been before it fell and higher than that of any city in the United States at the time.

Any student who is not wise enough to ignore the result of a well-timed, short-term study, is bound on the word and image that Detroit would have had had the removal of diphteria, but for the fact that half the children had been significantly pertained, and that the simple removal of the disease is sufficient proof of increase in herd immunity, even more convincing for its results. It is reasonable to note of similar events and all the other conditions in our study, it is possible for any diphteroid case, to look for the source who Detroit had the highest diphteria death rate of the U. S. A. was Detroit due to the acceptance and diphteroid drive having increased the risk of infection in its unprotected children by exposing the children of several diphteroid cases among the vaccinated children. As a result of this increased risk the extra number of cases among the vaccinated is considered the potential diphteria cases which had the opportunity to get up the epidemics in our study.

I must point out that it seems I am still a few inches from the whole picture, and cannot say with certainty, and also think it possible that the epidemic, including its cause, immunization against diphteria, and its eradication by the unvaccinated members of the herd. This may well happen again in the future, as well be discussed in substance (1956) and immunization program, and also in being pertained and (1) and that that there have been a very, very many.

Although I take the latter words of ecology, chiefly the top were some, and although I have also in past respects for the common problems of human relationships when they work out. I think that I have never been anything practical, but I believe myself that the following points that I have limited upon in my, are extremely practical.

For instance, it would be better in future to stop building isolation camps, and instead, on the plan of Hampton Court, make such double lines for isolation, round them, and spend the money saved on some more practical adventure of it is true that only institutions have been built in the purpose for which they were designed. If money building is only left to be, at give it up and spend the time gained in doing something useful or

minerals. If swimming pools and bath water are in great danger to the public health, it would be just as well to say so, and avoid trying to limit the popular use of a very heterogeneous hydrocarbon by processes known of uncertain value in their use in and baths.

Fourth, it is useful to know that when transmission, when done properly, may do as much damage as good to the public health, and that a comparison with dirty water may be in danger as one with dirty hands.

Finally, I shall have fulfilled my chief purpose if I have made anyone realize more fully than he did before entering this room, the extreme complexity and delicate balance of the relationships between man and his planet, and that human interference with this balance is sometimes followed by most unexpected results. Therefore, however reasonable and well organized one's schemes to prevent disease and improve the public health may appear to be, considered them as one forecasts the future, we must be disappointed if we find them useless or even dangerous when put into actual practice, and that just as in treating the sick individual or in treating the sick herd when we are not sure our maintenance will be beneficial, or at least harmless, it is often as well to let well alone and pursue a policy of noninterference.

[It is—in a 1943 manuscript, before one has to hold a subject dogmatically. Therefore I have given the following references in order to enable anyone who does not feel the statements above are justified, to judge some of the original work on which they are based for himself.]

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<sup>1</sup> I have read in the *Journal of Hygiene* the following references: *The Public Health*, 144, 444-446.

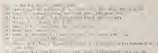


FIG. 1. Relationship between the number of eggs (N) and the number of eggs per female (n).

(Number of eggs = Number of females \* Number of eggs per female).

These 10 points have shown that gonapophyses are susceptible to infection with *Dr. alabicus* (Barman) or larvae already containing infective beings (e.g. larva). There is, however, considerable doubt as to whether or not the infective beings are actually infectious, experimental infection of laboratory animals with *Dr. alabicus* larvae failed to infect any, gonapophyses infected with *Dr. alabicus* (Barman) only succeeded in producing a chronic infection in gonapophyses by intraperitoneal injection of the organisms. In fact most of the laboratory species of fish are infected these animals with the pathogen. It was therefore considered that more further investigations on these points might afford valuable information, particularly in relation to the differentiation of the three members of the group from one another.

#### Experiment 1—Infection in gonapophyses

Four strains of *Dr. alabicus* were selected, all of which had been fully reconstituted and were known to be virulent strains. Larvae containing a standard quantity of 1000 virulent *Dr. alabicus* per cubic centimetre, were made from forty eight-hour cultures of these strains. Six gonapophyses were injected, four subcutaneously and two intraperitoneally, with one of these strains. 48 h. of incubation being used as an infecting dose.

One other fish was injected with the only *Dr. alabicus* (Barman) strain which we possessed at this time, the same time being given subcutaneously in for the subcutaneous strain. This strain of *Dr. alabicus* was however old and not absolutely virulent. It failed to agglutinate with any rough sea-water well agglutinated well with pure sea-water and failed to give a positive reaction with the thermagglutination test and showed no signs of subcutaneous infection. It will therefore be understood that the known strain of *Dr. alabicus* was put immediately to known rough.

Two other gonapophyses had the base from their external rudiment with removed by means of a depilatory (Nette). Two days later implants of two different strains of *Dr. alabicus* were added over these bare areas, the



method of Spencer (1936) using such a little water as a half fluid is evaporated away.

These animals were held periodically by various punctures, and after various applications to Dr. neohelminth and Dr. albertus tested. The results obtained are shown in Table 1. All these animals were eventually slaughtered 144 days after they had been experimentally infected.

Animals No. 1, 2 and 3 began to show signs of weakness with some loss of hair, two months after they were reported, but the remainder remained outwardly healthy until slaughtered. In animals Nos. 1, 2, 3, 4 and 5 the post-mortem findings were identical. In these the liver and spleen were found studded with small milky nodules, some of which were white and isolated but the majority were yellow and composed of soft, caseous material. The nodules were never numerous, the largest nodules found being eight in one lobe and seven in one spleen. When present on the surface of the liver they were definitely raised and circular with a diameter of 1 to 3 mm. and in this position they closely resembled the nodules of *Stegophilus* as seen on chocolate agar. In animal No. 6, in addition to these lesions, a nodule about as big as a No. 4 shot was found situated on the right supracoelic cord, and the same quantity on the left appeared to be thickened. When this nodule was cut across it showed some thick, yellow, creamy material.

It will be seen, therefore, that with one exception the animals injected either subcutaneously or intraperitoneally with Dr. neohelminth all showed a similar pathology.

In the one exception, No. 7 (a female guinea pig) it was found that, in addition to a few milky nodules in the liver and spleen, the right ovary was converted into a large multilocular mass of caseating material. This mass was very considerable in size and filled about half of the right flank of the abdomen. In grossing pig No. 1, infected by receiving Dr. neohelminth on the day of birth, the kidneys were almost obscured with those of No. 7. The whole of the right side of the abdomen was filled with one large casey material caseous mass which appeared to arise from the right ovary. This mass was so large that the small intestine was completely pushed over to the left side of the abdomen.

In grossing pig No. 8, injected with Dr. albertus (horvati) no signs of infection were found and all organs appeared healthy and quite normal. This also applied to the animal injected with a rough and circular strain of Dr. albertus. This strain was reported into animal No. 9, nearly as a test of control.

Cultures were made on long agar from all these lesions and from all caseous material but no *Penicillia* organisms were isolated, and only a few colonies of *S. ent* showed on some plates. In these media from caseous material and stained by Gram and Ziehl-Neelsen methods, no tubercle bacilli were seen and only a few organisms cultured in shape size and staining, were found.

1. *Journal of the American Medical Association*, 2000; 284: 2689-2695.

[illegible]

*Summary of Experiment 1.*—All the animals experimentally infected with *Br. melitensis* became diseased, the chief pathological features of the infection being small nodules resembling lesions in the tubercular spleen. Another characteristic of infection was the tendency for the spleen to be enlarged, especially in the early stages.

The failure to isolate the infecting organism was, probably, due to the fact that the post-mortem was performed too long after the date of infection.

The failure of the *Br. abortus* (ovine strain) to produce any signs of disease even in animals of a few weeks of age, even when exposed to it in a form known that the virus was old and becoming weak.

*Experiment 2.*—Two lots of *Alpaca huamata* or *Conotia australis*.

Owing to the frequently reported failure by early workers to infect the usual laboratory animals with *Br. melitensis* it was decided to experiment with an animal which has only recently appeared on laboratory premises, the *Alpaca huamata* or, to give it its full name, the *Conotia australis*. Through the kindness of Dr. A. Adler a supply of these animals was obtained.

A number of these animals were injected simultaneously and some intraperitoneally, with various strains of *Brucella* the same strain being used as with the guinea pigs in Experiment 1. The animals which were used and the pathological reactions given by these animals are shown in Table II. All these animals which received subcutaneous injections remained apparently healthy, and in the post-mortem beyond some slight congestion of the spleen seen in one animal, no pathological lesion was found macroscopically. This was true irrespective of whether *Br. melitensis* or *Br. abortus* had been used to produce infection in the animals. In both animals No 1 and 3 repeated intraperitoneally with *Br. melitensis* well marked chronic reactions developed. One week after injection both animals in both animals became diseased. At the post-mortem thirty-two days after infection, both animals were found to be moribund and emaciated, and the spleen and cord was rather involved in one large tubercular mass of nodules with a number of necrotic nodules. The liver spleen and other organs looked normal. *Br. melitensis* was isolated from the laminae testicular and in pure culture from the material that contained from the tubercular nodules in both animals.

Only one male animal was injected with the intratesticular *Br. abortus*. This animal died as the result of being shot twenty-seven days after being infected. In addition to containing lesions of the testicles and cords, the animal's left abdominal flank was filled with a large mass of tissue which was firm and covered two-thirds of the spleen. The liver and other organs were normal.

Two female animals, N. and B., were also injected intraperitoneally with the bovine strain of *Br. abortus*. The animal N. was slaughtered ten days after being injected and all the organs looked normal. Animal B. was

tingulated (dead) three days after death (observed) and yet spleen, liver and uterus all found infected. A more conspicuous disease, common to a number of yellow pike, was found in the region of the fish-belly. (Observed) was a fish three days p.p. 1917. *Strongyloides* (unobserved) died.

(1) *Strongyloides* by intraperitoneal injection of a parasite strain of 1916 (strain from January 2) was totally different from any yet described. This strain died three days after receiving the injection. On opening the abdomen, the spleen, liver and uterus were found dark and greatly enlarged. The peritoneum also looked hyperemic, and there were some small portions present. In uterus made from the cut surface of liver and spleen large numbers of small Gram-negative cocci-balls were seen. (No uterus present) was isolated in culture made from spleen, liver, uterus and vagina.

*Summary of Experiment 1*—It will be seen that in this experiment subcutaneous injection with *Strongyloides* uniformly failed to reproduce any disease in these hankers, but that they were extremely susceptible to intraperitoneal injection. The disease of domestic animals is instantaneously reproduced cannot be attributed to the fact that they were challenged before any pathological lesions had time to develop for all such animals gave very poor agglutination reactions. It must, however, be admitted that no culture was made from samples in which no intraperitoneal pathological lesions were found. It is therefore possible though extremely improbable that an infection analogous to that of the human type of *Strongyloides* might have been present in some of these animals.

Seven hankers were infected by intraperitoneal injection. One of these was accidentally killed on the same day so it was omitted. Of the remaining six animals five became diseased in form of which the disease was partially entirely confined to the peritoneum, the infection caused reaction and peritonitis, with some involvement in the male stream, and the uterus, ovaries and vagina in the females. In the male animals it is to be noted that swelling of the testes appeared within one week of infection.

Intraperitoneal injection with *St. shoshoni* (parasite) produced no results in infection that the only animal experimentally infected in this group with this strain died three days after being injected. It will be seen also that the type of disease produced by this *Strongyloides* strain in the second group resembled in many respects the human type produced by infection with an unknown infectant.

Only one animal (hanker 2) remained healthy following intraperitoneal injection. The strain used here was the human strain of *St. shoshoni* which had previously been found successful for guinea pigs, and was known to be old and becoming rough. It will be seen, however, that the human strain was readily infected two of the three hankers inoculated intraperitoneally with it.

Several young hankers like those present in infected guinea pigs were sent to medical staff of these infected hankers and the spleen only appeared to be diseased in one animal.

TABLE 1

A. and Breed(s)	Common	Sexes	Imm. treatment	Survival rate, %						Date of examination	F. B. findings
				Type of parasite treatment				Date of death			
				Medicine	Antibiotic	Both (a) + (b)	Control (c)				
No. 1	Redbreasted	Male 1	Interperitoneal	1. 1. 53	1.5000	1.5000				1. 1. 53	Infected ++ +
No.		2	Subcutaneous	"	500	500	1. 40	1. 50	1. 1. 53	Healthy ++ +	
No. 2		Male 1	Interperitoneal	1. 1. 53	1.5000	1.5000				1. 1. 53	Infected ++ +
No. 3		2	Subcutaneous	1. 1. 53	1.500	1.500				1. 1. 53	Healthy ++ +
No. 4	White-throated	1. 2.	Interperitoneal	1. 1. 53	1.500	1.500	Dead when examined			1. 1. 53	Infected ++ +
No. 5		1. 1.	Subcutaneous	1. 1. 53	1.500	1.500	500	1. 50		1. 1. 53	Healthy ++ +
No.	White-throated	1. 2. 3.	Interperitoneal		Infected one deadly	1. 5. 53					"
No. 6		1. 2. 3.	Subcutaneous		1. 500	1. 500	1. 50	1. 50		1. 1. 53	Healthy ++ +
No. 7	Mountain Lark	1. 2.	Interperitoneal	1. 1. 53			500	500		1. 1. 53	Infected ++ +
No. 8	Mountain Lark	1. 2. 3.				Dead 1. 1. 53					Infected ++ +
No. 9	Mountain Lark	1.		1. 1. 53			1. 5. 53	1. 5. 53		1. 1. 53	Infected ++ +

— = Healthy bird  
+ = 10 days infected  
++ = 10 days infested  
++ + = 7 days heavily infested

Notes of Birds Nos. 1  
 Male 2. Infected from day 1 and of a female one of  
 infected from day 1. 1. 53.  
 Male 3. Infected from day 1. 1. 53. Female one of  
 and dead from day 1. 1. 53.  
 1. 1. 53. Infected from day 1. 1. 53.  
 1. 1. 53. Infected from day 1. 1. 53.

Experimentally, such lesions represent an important pathological lesion occurring in the lungs of all the rhesus monkeys, but all these (1) have shown well-marked thick and homogeneous grey patches through the lungs, and (2) have numerous streaks, which had also been passed through these animals. It must be noted, however, that in this experiment, two different animals (1945b) were used, all of which had been infected from the same source, & seemed to approximate the same data.

The experimental series are—

- (1) The rhesus monkey strain M.H.1, taken from animal records at home on 1 Nov. 1947 (April 1948).
- (2) The rhesus monkey strain M.H.1 isolated from the lungs of human N. 1000 (April 1948).
- (3) The rhesus monkey strain C.H.2, isolated from the lungs of human Z. 1000 (April 1948).
- (4) The rhesus monkey strain A.H.1, isolated from lungs of human Y. 1000 (April 1948).

Subcutaneous injections of, and skin infections were produced, as well as pneumonia, in the three strains. The experimental conditions given in Table I, C, indicated the degree of Table III.

In this experiment it was arranged as far as it was found possible, to do so, with all the two pigs injected subcutaneously, and in order and time, and to have them injected from the same source. From the same source, the same M.H.1 strain, the rhesus monkey strain M.H.1, and the rhesus monkey strain C.H.2, and the rhesus monkey strain A.H.1, were injected subcutaneously. All right animals were found diseased when treatment for the genital glands was only effected, a case of them, for M.H.1. Thus, after the first injection was injected, the results were similar, and in the post-mortem, the right side after infection, the post-mortem was found to be similar, and in addition, a few small lesions were present in liver and spleen.

In the other two animals, that is to all four monkeys injected subcutaneously, with the M.H.1, the two monkeys injected subcutaneously, the results were similar, and in addition, only small lesions in liver and spleen, and small lesions in the right lung, were found.

The results were as recorded from the liver and spleen in the animals in which only these organs appeared diseased. In animal N. 1000, also isolated from the same source, although the genital glands in the genital glands appeared healthy. In animal N. 1000, the results were as recorded from the liver, spleen, testis, and animal N. 1000.

Although through the treatment this was successful in producing similar results, the experimental data of which was recorded in Table I, C, the results were as recorded from the liver and spleen, and in addition, a few small lesions in liver and spleen, and in addition, a few small lesions in the right lung, were found.

and right lungs of the lungs were involved in one large necrotic mass that occupied the whole of the right side of the abdomen. Milky lesions were also present in terminal spleen. *Br. melitensis* was isolated from all these lesions and from the spleen in animal No. 167.

Three animals were injected with the purulent strain of *Br. abortus*. One female (P 2) subsequently a female (P 2) and a male (P 2) intact post-mortem. No sign of disease was found in the male animal at the post-mortem but both females had milky lesions of liver and spleen, the genital glands being normal.

The *Br. abortus* leucine strain was injected intraperitoneally into two male guinea-pigs and both animals became diseased. In one animal (A. 1) both testicles became very swollen a week after injection. The disease developed so rapidly that this animal had to be slaughtered after only twenty days had elapsed since infection was produced. Both testicles were enormously swollen and adherent to the skin which had ulcerated and some very white necrotic matter could be seen coming. In addition to infection of both testicles the distal end of the left uterine tube was engorged in a large mass of necrotic material in the peritoneal cavity which was adherent at this point to the anterior abdominal wall. In the other animal (A. 2) the left lobe of the liver was found to be converted into a mass of necrotic which filled the whole of the upper left side of the abdomen. One small nodule was also found in the right lobe. No other lesions beyond those described were found.

This leucine strain was also injected subcutaneously into two male guinea-pigs. One remained healthy. In the other (A. 3) a large abscess developed in the subcutaneous tissue at the site of injection after one week. This enlarged rapidly and when the animal was slaughtered thirty three days after it had been injected the swelling involved most of the flank and hind-thigh. The skin over the swelling had ulcerated and thick white necrotic material was coming. As well as this abscess a few nodules were found in the liver and the spleen, genitalia were normal.

*Br. abortus* (leucine) was isolated from all lesions in these three animals.

Some of the unswollen skin with *Br. abortus* (leucine) failed to produce any disease in either of the two guinea-pigs on which this method of producing experimental infection was attempted.

Summary of Experiment 3.—From this experiment it would appear that guinea-pigs are at least susceptible to infection with *Brucella abortus*, and that this organism has the property of infecting their tissues through the unswollen skin.

Subcutaneous infection of *Br. melitensis* tends to produce a disseminated and generalized disease in the guinea-pig, chiefly characterized by the formation of milky nodules in the liver and spleen. Intraperitoneal injection of *Br. melitensis* sometimes produced a "leucine" reaction but this was the exception rather than the rule and the more usual form of the disease found in animals infected in this way with this organism differed little, if at all, from that produced by intravenous infection. When a

## 2. Sensitivity of Animals to Interstimulus Delays

When animals did appear to react to interstimulus delays in some experiments.

Animals appeared to be affected by the delay between the sound of the gun and the shock, although produced by the machine, and they also developed some sensitivity. For example, interstimulus inhibition of the response was observed only when by the formation of a large number of shocks in the case of injection. Interstimulus inhibition was followed in a week by working out of the relation and when the animal was frightened only three, with only one, injected, previously no normal interstimulus response remained. It is difficult to state that in this animal the function appeared to be entirely regained in the posttest. In the only other animal injected intraperitoneally with the sound of Braille the relation was also learned, but in this case in one take of the lever. These guns sounding and were learned because are in marked contrast with the more widely spaced small battery lamps found in the majority of animals related with the machine. It was also stated that the animals learned from these guns sounding because was positively white in color and mounted in transparency, but that from battery lamps was deep yellow and almost as thick as glass.

The lamps produced by the electric generator resembled those of the machine.

Conclusions—While it is fully realized that such experiments as these are no too small a scale to allow their practical value to be assessed accurately the following would seem to be suggested:—

(1) That animal inhibition might be found of value in differentiating electric stimuli from mechanical stimuli and especially so in the separation of genuine from learned stimuli of the electric. At present the two most reliable methods namely the production of E.R. reflex after Haffkine, 1929, and the surgical method of Fink and Wilson, 1932 seemed only to develop these Braille into two groups—one electric group and a learned group. In both these methods genuine and learned stimuli fell into one stimulus group, the electric group. It is impossible, therefore to distinguish genuine stimuli from learned stimuli by either method. In the experiments just described it would appear that genuine and mechanical stimuli fell into one group, while the electric learned stimuli remain separate. It will therefore be easily understood why animal inhibition may be found of value in the difficult problem of identifying these genuine stimuli of the electric.

(2) The Rappa lantern would appear to be more susceptible than most other to interstimulus reaction with Braille, more electric stimuli could be combined for greater range, essentially related these lanterns. It is therefore suggested that interstimulus reaction of these animals with respect such as blind or even from computer cases of inhibition. In the case of possibly related stimuli, might be found of value in the response of Braille reference. At present there is no satisfactory method of detecting sensory stimuli through correspondence, and such a device as is here suggested might be very successful.



No.	Sex	Species	Age	Status	Time of collection				Locality	Remarks
					Date	Time	Remarks			
							Remarks	Remarks		
1	Male	Macaca mulatta	10	10	10	10	10	10	10	10
2	Female	Macaca mulatta	10	10	10	10	10	10	10	10
3	Male	Macaca mulatta	10	10	10	10	10	10	10	10
4	Female	Macaca mulatta	10	10	10	10	10	10	10	10
5	Male	Macaca mulatta	10	10	10	10	10	10	10	10
6	Female	Macaca mulatta	10	10	10	10	10	10	10	10
7	Male	Macaca mulatta	10	10	10	10	10	10	10	10
8	Female	Macaca mulatta	10	10	10	10	10	10	10	10
9	Male	Macaca mulatta	10	10	10	10	10	10	10	10
10	Female	Macaca mulatta	10	10	10	10	10	10	10	10
11	Male	Macaca mulatta	10	10	10	10	10	10	10	10
12	Female	Macaca mulatta	10	10	10	10	10	10	10	10
13	Male	Macaca mulatta	10	10	10	10	10	10	10	10
14	Female	Macaca mulatta	10	10	10	10	10	10	10	10
15	Male	Macaca mulatta	10	10	10	10	10	10	10	10
16	Female	Macaca mulatta	10	10	10	10	10	10	10	10
17	Male	Macaca mulatta	10	10	10	10	10	10	10	10
18	Female	Macaca mulatta	10	10	10	10	10	10	10	10
19	Male	Macaca mulatta	10	10	10	10	10	10	10	10
20	Female	Macaca mulatta	10	10	10	10	10	10	10	10
21	Male	Macaca mulatta	10	10	10	10	10	10	10	10
22	Female	Macaca mulatta	10	10	10	10	10	10	10	10
23	Male	Macaca mulatta	10	10	10	10	10	10	10	10
24	Female	Macaca mulatta	10	10	10	10	10	10	10	10
25	Male	Macaca mulatta	10	10	10	10	10	10	10	10
26	Female	Macaca mulatta	10	10	10	10	10	10	10	10
27	Male	Macaca mulatta	10	10	10	10	10	10	10	10
28	Female	Macaca mulatta	10	10	10	10	10	10	10	10
29	Male	Macaca mulatta	10	10	10	10	10	10	10	10
30	Female	Macaca mulatta	10	10	10	10	10	10	10	10
31	Male	Macaca mulatta	10	10	10	10	10	10	10	10
32	Female	Macaca mulatta	10	10	10	10	10	10	10	10
33	Male	Macaca mulatta	10	10	10	10	10	10	10	10
34	Female	Macaca mulatta	10	10	10	10	10	10	10	10
35	Male	Macaca mulatta	10	10	10	10	10	10	10	10
36	Female	Macaca mulatta	10	10	10	10	10	10	10	10
37	Male	Macaca mulatta	10	10	10	10	10	10	10	10
38	Female	Macaca mulatta	10	10	10	10	10	10	10	10
39	Male	Macaca mulatta	10	10	10	10	10	10	10	10
40	Female	Macaca mulatta	10	10	10	10	10	10	10	10
41	Male	Macaca mulatta	10	10	10	10	10	10	10	10
42	Female	Macaca mulatta	10	10	10	10	10	10	10	10
43	Male	Macaca mulatta	10	10	10	10	10	10	10	10
44	Female	Macaca mulatta	10	10	10	10	10	10	10	10
45	Male	Macaca mulatta	10	10	10	10	10	10	10	10
46	Female	Macaca mulatta	10	10	10	10	10	10	10	10
47	Male	Macaca mulatta	10	10	10	10	10	10	10	10
48	Female	Macaca mulatta	10	10	10	10	10	10	10	10
49	Male	Macaca mulatta	10	10	10	10	10	10	10	10
50	Female	Macaca mulatta	10	10	10	10	10	10	10	10

To detect whether an animal infected with such material had been infected, periodical examinations of the animal's blood for the presence of agglutinins could be relied upon for accurate information. However, since all infections necessarily selected developed a "virous" reaction equally, irrespective of nature and culture of organism, this might be even more helpful. It has already been shown that when cultures were made from the serum of blood of infected human they were invariably successful in isolating the causal organism.

(3) The frequency with which the causes of female genital pyo were attacked would seem to support the view already expressed by the author (1935) that abortion, in cattle and other animals is not merely due to an endometritis, but to an actual invasion of the uterine wall, the endometrial changes being largely secondary to a destruction of corpus luteum. This theory is also supported by the fact that infection in man is more often shown by a failure to conceive rather than by actual abortion. Infection in goats seldom produces abortion, but when this does occur it is frequently found to remain sterile after death.

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### STUDIES IN THE TREATMENT OF MALARIA IN MALAYA

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#### 1.—Introduction

In order that the reader may understand the conditions under which these observations were made it is necessary to give a few details as to the working of the Medical Department at H. D. North Base, Singapore.

The cases treated were Chinese, European, Malayan, White and (1) were sent on command to Malaya, Japanese and Japanese. As there is no hospital accommodation for Europeans, the bulk of their treatment is not included in these records.

To secure the maintenance of a high standard of health, and to encourage the introduction of infectious diseases and potential carriers of malarial infection, we subjected to medical examination before being entered the employment. Careful records are kept of all examinations made, these include personal history, height, weight, age, haemoglobin percentage, plasma index, heart and lung condition, and general physical signs.

The chief causes of rejection are the signs of chronic malaria, splenic enlargement and anaemia. These examinations (including re-examinations) amount to over 7,000 per annum, but the work entailed is more than compensated.

When a new entry is found to be malarially fit, he is given a bonus due



For twelve months past the method of treatment employed. The cases did slightly better, especially those involving pulmonary infection and vomiting were not so frequently noted. The depression and general sickness was not so marked and the number of relapse cases increased partially the same as previously. We find that our down quinine by about 100 gr. per case, had eliminated the work entailed in dosing quinine to an astounding but which required continued control and checking, had more successful patients in the hospital and, as far as our control was, the end result was equally good. During that year 1941 the number of relapse cases amounted to one-third of the total number of malarial cases admitted to hospital.

In 1942 during a seven outbreak of malaria on the Naval Base the malarious rate involved such dosing properties that even assuming that a better number of the cases were recalcitrant, it was obvious that our treatment was far from satisfactory. While adhering to the modified Sinton's method we increased the dose of quinine to 40 gr. and eventually to 60 gr. per day, with no decrease in the percentage number of relapse cases.

The effective treatment was then abandoned and cases were given two days treatment about 100 gr. of quinine in hospital and then discharged to duty. All these cases have returned on the work and received 10 gr. of quinine daily for a further thirty days. As at one period the two occurred 100, and as there had to be movement at various times and places on the work so much movement in the malarious, one can imagine the difficulty and work entailed in maintaining that each case received his proper treatment.

From the common report of this—which might be called an experiment—the number in hospital gradually rose, although the daily number of fresh cases had diminished to about one-third of the number of the malarious cases. This method of treatment was obviously unsatisfactory and the expense of the quinine issued on the work (about 40 dosing days) was not justified.

The rate of malariousness steadily diminished when we resumed the method of treatment employed prior to 1941, but with an increased dose of quinine. Patients were limited in hospital for ten days (receiving about 500 gr. of quinine) and were then discharged to duty but had to attend at the hospital twice daily for 100 gr. of quinine (100 gr. daily) for one month.

Towards the end of September 1942 these malarious feverish symptoms had disappeared and nearly one month after fresh infections had been reduced to a minimum and presumably the carrying capacity had died out the malariousness continued to exist. Some of these being the fifth with and even several relapse it was decided to try, not the new drug, which had been previously reported on by a few workers who had, however, treated only a somewhat limited number of cases.

TABLE 1

Percentage of species, genera, and families represented by groups of 1-5 genera

	1				2				3				4				5			
Phylum	444	1.1	1.1	0.7	100	0.7	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	
Class	11	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	
Order	40	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	
Family	10	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	
Genus	10	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	
Species	10	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	

TABLE 2

Percentages of the mean of individual annual catch rates for the groups of 1-5 genera that are in the 1-5 genera groups. The 1-5 genera groups are: 1-5 genera, 6-10 genera, 11-15 genera, 16-20 genera, 21-25 genera, 26-30 genera, 31-35 genera, 36-40 genera, 41-45 genera, 46-50 genera, 51-55 genera, 56-60 genera, 61-65 genera, 66-70 genera, 71-75 genera, 76-80 genera, 81-85 genera, 86-90 genera, 91-95 genera, 96-100 genera.

	1-5 genera				6-10 genera				11-15 genera				16-20 genera				21-25 genera			
	BT	ST	Mean	SD	BT	ST	Mean	SD	BT	ST	Mean	SD	BT	ST	Mean	SD	BT	ST	Mean	SD
Species	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Genera	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Families	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Order	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Class	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Phylum	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Kingdom	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Order	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Class	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Phylum	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Kingdom	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Order	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Class	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Phylum	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Kingdom	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Order	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Class	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Phylum	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Kingdom	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Order	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Class	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Phylum	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Kingdom	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Total Species	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Order	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Class	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Phylum	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Kingdom	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Order	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Class	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Phylum	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Kingdom	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

TABLE 3

Total mean catch rate for the 1-5 genera groups. The 1-5 genera groups are: 1-5 genera, 6-10 genera, 11-15 genera, 16-20 genera, 21-25 genera, 26-30 genera, 31-35 genera, 36-40 genera, 41-45 genera, 46-50 genera, 51-55 genera, 56-60 genera, 61-65 genera, 66-70 genera, 71-75 genera, 76-80 genera, 81-85 genera, 86-90 genera, 91-95 genera, 96-100 genera.

	Total mean catch rate	Standard deviation	Standard error
1-5 genera	100	100	100
6-10 genera	100	100	100
11-15 genera	100	100	100
16-20 genera	100	100	100
21-25 genera	100	100	100
26-30 genera	100	100	100
31-35 genera	100	100	100
36-40 genera	100	100	100
41-45 genera	100	100	100
46-50 genera	100	100	100
51-55 genera	100	100	100
56-60 genera	100	100	100
61-65 genera	100	100	100
66-70 genera	100	100	100
71-75 genera	100	100	100
76-80 genera	100	100	100
81-85 genera	100	100	100
86-90 genera	100	100	100
91-95 genera	100	100	100
96-100 genera	100	100	100

### IV.—Diagnosis

Diabetes is a bright yellow, pulpy (7 grs. gly. contains water 10 grs.) mass, a neutral solution and one to three times as much as table sugar, or liquid form. It is (10) 1/2. Still any power retaining honey is a pleasant taste to the child. The viscosity of honey (10. grs. 100 fluid made honey) but it is packed (100 grs. gly. contains 100 grs. gly.) clear.

### IV.—From the Urine

Urine—(1) The characteristic yellow color of urine may be used in the urine when it is being examined in quantity.

(2) If a sample of urine on a test-tube is made slightly acid and heated the yellow colour of diabetes is well demonstrated.

(3) Under the same action, and when the urine is with other fragments, the other and darker the substance is concentrated sulphuric acid, and a fluorescent yellow colour appears. We have found that, when the fluorescence is so slight as to be doubtful as to its presence, mixing the liquid through a coarse sieve is an aid to perception.

A fluorescent test of this nature always permits of cure in human subjects, and would seem more definite, but in found it will be impossible to state for when good urine is secreted after the administration of the drug has been discontinued. It is usually difficult to say that a definite fluorescence is present after the fifth day after the completion of a course of diabetes, but it is very probable that cases of diabetes continue to be secreted for a very much longer period.

The fluorescent test just described can be used in the case of dogs and cats.

### V.—Measure of Amounts

On admission blood counts are taken from the patient, and whilst awaiting a laboratory diagnosis he is given saturated 3 grs., followed by 100 grs. 1/2.

If the blood contains normal particles, he is given diabetes 81 grs. (14 grs.) three times daily for six days. If it is a moderate infection, he is given, in addition, penicillin 100 grs. (1 grs.) three times a day for the next five days of treatment.

Children under one year are given diabetes 60 to 64 grs. daily for five days according to the age, and a general condition.

From 1 to 4 years 64 grs. diabetes and from 4 to 8 years 64 grs. diabetes are given daily for five days. Children over 8 years receive as adults dose of 100 grs.

When this has been the routine method employed in the Anstey Hospital, considerable variations have been tried. It has been concluded that most cases are cured by a five days course of diabetes (total of 12 grs. or 18 grs.) that a five days course (total 18 grs. or 24 grs. of diabetes) is the optimum, and that the routine six days course leaves a safety margin of one day's treatment.

Given in the continuous sitting of 100 mg. in 14 to 16 comparisons in giving, when necessary at seven days' treatment, it will be pointed out later that it is not the case with the administration of physostigmine.

It should be noted that the effectiveness of the treatment is not altered whether the daily dose is given as one dose or is subdivided into three doses.

#### VI.—WOMEN AND CHILDREN TREATED AS OUTPATIENTS

As pointed out in the introductory note to this paper the cases of children treated here were not under such direct supervision as those who were treated as inpatients.

In a general rule the patients attended in the morning and were given their morning dose, the other two doses were taken away by them so to be taken in the course of the day. To any person who has worked amongst this type of disease it is at once conceivable that in some cases patients might only be receiving one third of the prescribed amount of medicine each day. Comparing this with the fact that in the beginning we were rather slow to give so much as what we now consider to be a harmless but effective dose of atropine, we are justified in doubting that the eleven relapses which occurred amongst the fifty seven out-patient patients treated in a lay hospital were.

THREE.—Fifteen women have been treated with atropine and two relapses have occurred.

CASE (W-208) had three attacks of spasms during the six months previously. Her blood was still found to be infected with *hooker* twelve months, and she was given a course of atropine. Two months later *hooker* was again found in her blood. Another course of atropine was given and now after a period of three months, the blood still remains free from parasites.

CASE (W-115) relapsed three months after a full course of atropine. A second course was given and the peripheral blood has remained free from parasites.

THREE cases were treated with full courses of atropine during pregnancy, one case was in the sixth month and these were all full cures. The men showed no untoward symptoms during the treatment, gave birth also usually to healthy full term children, and when an interval of five months no relapse has occurred.

FIVE of the cases were treated with full courses of atropine while they were breast feeding. The general condition of the mother seemed to improve with the treatment and the babies concerned did not seem to be in any way affected, although a trace of atropine was found to be excreted in the mother's milk, and in one case atropine was demonstrated in the infant's urine.

Most of these women treated had had two, three, or four relapses of *hooker* before relapse which had been treated previously with quinine.

limited quantities and the occasional symptoms were noted with considerable intervals with the absence of anemia.

*Comment.*—The treatment of fifty-two children as out-patients has been very instructive as to the kindness of the drug, the efficacy of the drug, and the necessity of giving at least the full dose suggested by Hayes Meyer (half a gram daily) as to be obtained.

Eighteen children 3 years of age were treated with arsenic—one of three months' age, given half a tablet (0.05 gram) daily for six days, and on taking this baby grew into a sturdy child. Two cases each 4 months old were treated—one with half a tablet daily and the other with one tablet daily for six days. Both did very well and the large dose is equal to 0.6 gram at the normal rate appeared to have no effect.

#### The B—Family

This family is worthy of note here because of the resistance of their younger children to arsenic in any form of treatment. The family consists of six children with ages ranging from 4 years to 10 years.

(a) V, aged 4 years. Within the last two years has been treated thirteen times for benign tertian malaria. Quinine had been given in all forms, including Sinton's alkaline method, and in combination with placebo quinine, iron and arsenic, etc. It might almost be said that during this period when the child was actually under the influence of quinine, parasites could be demonstrated in the peripheral blood. Six months ago arsenic 0.1 gram per day for six days was given and five and a half months after parasites were found in the blood.

(b) H, aged 10 years. Had four relapses, which were treated with quinine. Six parasites have been found since a full course of arsenic was administered six months ago.

(c) B, aged 9 years. Had two courses of quinine treatment each extending over a period of from two to four weeks. He was given an adequate course of arsenic (0.1 gram per day for six days) and relapsed three weeks later. He was then given 0.1 gram per day for six days and after three months the blood has remained free from parasites. Treating 4 months later, with our present knowledge 0.1 gram per day for six days would be given as the first course.

(d) F, aged 7 years. Within the last two years has had four relapses, each of which has been treated with various forms of quinine and for a seven lengths of time. She relapsed ten weeks after a first course of arsenic (0.1 gram daily for six days). This dose may have been slightly inadequate, but up to four months after a second course she has had no relapse.

(e) G, aged 7 years. Had seven courses of quinine within the last two years four of which were during the previous six months. She was treated with arsenic 1 tablet daily (0.1 gram) instead of 0.2 to 0.4 gram daily for six days, but relapsed after ten weeks. Since an adequate course of arsenic is given three more the age on relapse has occurred.



(c) *Ch. aged 7 years*. This had eight relapses during the last two years and it was treated with various doses of quinine. The last course of tablets consisted of 0.1 gram daily for 20 days and a relapse occurred seven weeks later. A course of 0.2 gram daily for 20 days and a relapse occurred seven weeks later. A course of 0.3 gram daily for 20 days also resulted in a relapse. Since a full dose of 0.4 gram daily was given for 20 days no further relapse has occurred.

The interesting points in the history of this family are that they were all infected about April, 1951. As they lived in the Cuckoo Lane and as other cases occurred about that time it is presumed that they picked up the infection somewhere outside the Buse area. Why the infection should be so resistant to treatment is a matter for comment. The last woman that was one of the family ever got rid of the parasites and immediately a course of quinine was completed the tempostature rose and parasites were found to be present in the peripheral blood. After treatment with tablets, except in the case of B., all the cases have relapsed although the period between the relapses has been greatly increased. The children have been weak since have had lost appetite and have not been that well though the doctor's many medicines. It must of course be borne in mind that one had experienced in the first instance with very small doses in the younger members of the family.

*Relapses*.—Apart from these five cases in the B.—family referred to above, only four other relapse cases occurred amongst children treated with tablets. All four cases may have been treated with doses which were fairly adequate. The following is an analysis of these:—

(i) *CH. aged 7 years*. This case had previous treatment with quinine but relapsed and was treated with tablets 0.1 gram per day for 20 days. She relapsed five weeks later and was then given 0.1 gram per day and has shown no parasites in the peripheral blood after three months. The dose for this child is from 0.2 to 0.3 gram per day.

(ii) *CH. aged 6 years*. This child was given tablets 0.1 gram per day for 20 days but relapsed after seven weeks. The dose during this period was given and no relapse has occurred after two months. This case probably should have been given, in the first instance, 0.2 gram per day.

(iii) *CH. aged 5 years*. This case had been treated with quinine for five relapses during the previous six months. She was given tablets 0.2 gram per day for 20 days but relapsed after two weeks. The dosage of tablets was then doubled and after three and a half months there has been no relapse.

(iv) *Child*. This was a child, aged 3½ months who was given 0.05 gram of tablets daily for 20 days. Two days after the course was finished parasites were found in the blood. The course was recommenced, but this time 0.1 gram per day was given and after three and a half months no relapse has occurred. It is considered possible that the child did not receive the first course in full.

## VII.—THE EFFECTS OF TREATMENT ON THE PERIPHERAL PLASMA

The treatment checked and in some cases the parasites in the peripheral blood were killed by the use of 150 grs. of atabrine.

*Atabrine Experiments.*

In this series it was observed that parasites had disappeared from the peripheral blood by the fourth day of treatment. That is, that if the treatment commenced at noon on the first day, after a lapse of two clear days, the blood was negative on the following morning. In other words, 48 grs. of atabrine given over a period of two and a half days rendered the blood free from parasites. Ninety-two per cent. of cases gave a negative blood about or about as 48 grs. of atabrine.

In 42 per cent. of cases the several forms disappeared from the peripheral blood before the gametocytes (the ring forms disappearing before the schizonts).

*Schizonts.*

In this series it was observed that on an average the parasites present for about eight hours longer than in the longer Indian series. That is to say, if treatment was commenced at noon on the first day, and two clear days allowed to elapse, the blood was not free from parasites until the following evening instead of the following morning. In other words, 48 grs. of atabrine administered over a period of three days rendered the blood free from parasites.

In 71 per cent. of cases the several forms of parasites had disappeared after the administration of more than 48 grs. or 144 grs. of atabrine.

Several forms (schizonts) were noted to disappear from the peripheral blood about the tenth day after commencement of treatment or four days after treatment had ceased. Whether this was spontaneous recovery or due to the treatment with atabrine or due to these forms becoming quiescent or to the spleen and bone marrow is a matter for comparison.

It must be borne in mind that if atabrine has destroyed all several forms no relapse can occur. Unless one accepts Schaudinn's Theory of Pathogenesis of the human malarial parasite or the existence of another form of the parasite from which the several types can be redeveloped, as suggested by Craig and James. Hence the number of red blood cells infected with merozoites is usually very small indeed, and since it is accepted that the fever is entirely caused by the burning of the schizonts and the liberation of merozoites together with some toxic substance, the parasite can have got rid of the several forms should remain fit although they are still potential sources so long as merozoites persist in the blood.

The life of the gametocytes is probably a very short one and as a rule will have been estimated to have a life of thirty days, possibly the length of life of a merozoite is somewhat within this period.

VIII.—THE EFFECT OF TEMPERATURE IN SHORT-COURSED  
TREATMENTS OF DYSENTERY

Temperatures were recorded morning and evening, and the time when the initial dose of salicin was given was marked on the chart.

In a general rule cases were designated as true, severe and on that day they received two tablets of salicin. The temperature dropped before noon normally to normal or slightly above, and when continued down to normal again in the evening, to keep the following morning and remain at normal during the remainder of the period of treatment.

The exact figures recorded are as follows:—

*Severe Typhoid Cases*

50 per cent. of cases dropped after two tablets of 1/2 gram (that is within twenty hours), and had no subsequent rise.

42 per cent. of cases dropped after two tablets, but rose again to 99° F. or over on the following evening, having received by this time four to five tablets. (24 per cent. of these cases rose above 100° F.) These were all normal within a period of forty-four hours.

This second rise in temperature was not so high as those frequently seen in cases which were left untreated for the first day.

A per cent. of cases did not drop to normal till the end of the second day or after receiving three to five tablets of salicin.

3 per cent. of cases showed a second rise on the third day, but then only to a temperature ranging between 99° and 99½° F.

1 per cent. of cases who had normal temperatures merely slight fever at the time of diagnosis developed a temperature of from 100° to 104° F. after two doses of salicin had been administered.

In the treatment of benign typhoid cases with a combination of salicin and phenazone no difference is seen in the charts, and the percentages of cases produced by the same as above.

*Subfebrile Cases*

While we have seen that in the benign typhoid cases treated with salicin over 50 per cent. of temperatures drop after two doses of salicin more than half of those remaining normal whilst nearly all the others rose and drop again to return normal. After the 1/2 gram, that is 0.5 gram, the rule between cases treated either with salicin, or salicin and phenazone, had reached normal by the third day, or on forty-eight to fifty-six hours after commencement of treatment, but this fall was a gradual one in many cases and not a sudden drop with or without a second rise.

As only two in the whole series of salicin-treated cases developed a temperature on or after the third day, they are, as a point of interest, worthy of note here. They were both fever cases with moderate subsidence of benign typhoid nature.

(1) The first case dropped to normal after 2 tablets of salicin, and

remained normal the fifth day, when the temperature shot up to 104.5° F. *Stibium* was continued and there was no further rise, and no relapse has occurred.

In this second case was diagnosed and treatment commenced when the temperature was 99.4° F. On the first day the temperature rose to 101.4° F., but dropped and remained normal during the second day. On the third day it shot up to 104.0° F., remained normal on the fourth, fifth and sixth days and again shot up to 103.0° F. on the seventh day, when benign tertian parasites were again found in the blood. The temperature dropped on the eighth day and remained normal afterwards. *Stibium* here was continued over a period of thirteen days: a total of 15 gm. or 50 gr. of *stibium* were administered. Except during two periods of fever the patient remained perfectly fit, eating and sleeping well. No relapse has occurred and his blood has remained negative.

It may be noted here that from a clinical point of view in treating both benign tertian and malarious malaria it is immaterial whether *stibium* is given alone or in combination with quinine.

On reviewing the temperature charts it was noticed that after the temperature has dropped it went along during the remainder of the course of treatment slightly below normal, that is, between 99° F. and 99.4° F. When the temperatures of a number of healthy Chinese and Indian natives were taken at 8 a.m. it was observed that 98° F. was a normal temperature in these latitudes.

There is no evidence that *stibium* is a depressant, and many cases state that it stimulates them and acts like a tonic (this has been confirmed by several Europeans who have had *stibium* treatment).

#### IV.—Hæmoglobin, Iron.

The percentage of hæmoglobin increased by an average of 4 per cent. at the close of *stibium* was being administered. This was due in part to the fact that the percentage of hæmoglobin was lowest in the first place by the malarial infection, and that the removal of iron infection took advantage by natural tendency in part of the blood returning to normal.

Many individuals working hard for long night and day hours daily in the sun as put to bed in rest and given a glass of good nourishing food, an increase almost equal to this will be noted.

The increase in different cases varied considerably, as for instance in fresh infections the percentage of hæmoglobin was not so low, as in the malar chronic cases, and consequently the increase was not so marked. A marked increase in some cases was due to the treatment of some concomitant disease as, for example, *syphilis* etc.

It would thus appear that the rise in the hæmoglobin percentage is not of much importance as an index to the efficacy of *stibium* in the treatment of malaria, but it is very satisfactory to note as in malarious cases months after the *stibium* treatment that the rise is not a temporary one and that the higher hæmoglobin index persists.

# NOTES ON SPLEEN ENLARGEMENT

Enlargement of spleen in the spleen, being temporary when the patient was actually under treatment was not consistently marked. Cases in which the peripheral blood was heavily infected, or where there was leucopenia over the spleen, a reduction in the size, although often slight, was almost invariably noted during the period of treatment.

In the case of chronic or repeated infections the transitory decrease in the size of the spleen was noticeable if there was a heavy infection at the time, but if there were only an occasional parasite found in the blood and the enlargement was apparently due to persistent infection no decrease in size was noted.

As the immediate reduction in the size of the spleen was usually very slight, and was presumably due to the relieving of the congestion in that organ, one large mass more stress on the result of examination of the spleen seemed out of line to its results after treatment.

In a series of cases which were recorded as having enlarged spleens on discharge from hospital, it was found on subsequent examination that 31.1 per cent. had now no palpable spleen; 33 per cent. of them had originally noted to arise from two fingers breadth beneath the costal margin in the level of the umbilicus, the remainder being only palpable.

33.3 per cent. of the cases were still found to have palpable spleens. 25 per cent. of these were recorded originally as extending two to three fingers breadth beneath the costal margin, the remainder were recorded as being palpable.

In short, 77.4 per cent. of cases with splenic enlargement showed a marked decrease in the size of the spleen. The effect of the treatment was most marked on the larger spleens which one would have expected to have been considerably fibrosed and beyond the pale of any treatment.

## III.—RELAPSES.

The recurrences which seldom or existing on the treatment of malaria is probably most marked in the proportion of patients to prevent relapses.

In my first series of 200 febrile malaria cases treated with salicin alone, 16 relapses have occurred during a period of over six months. Four of these have relapsed a second time. Although the percentage relapses is 10.7 in this series it is a big step beyond the results usually obtained with quinine, where one has found even after prolonged courses up to 40 per cent. relapses, some of which relapses for the 2nd, 3rd and 4th time.

In this group, the shortest period in which a relapse occurred was forty-two days, the longest was hundred and nine days, and the mean was seventy days.

The cases which relapsed in this group had all been issued from one to four times with quinine during the previous six months. In no case did a fresh malarial relapse after a course of salicin treatment.

In a series of 176 febrile malaria cases treated with salicin given in

compared it with patients previously treated by three courses of diarsone, a course of quinine, and another. Quinine developed a second fever. Here the malarial index to first fever is 100 units, 77.5 to second (M), better than 100 to diarsone. The diarsone patient's entire blood count was eight days into the first of two hundred and twenty days, with a course of malarial eight days. Two of the cases who had fever in this group had no previous history, and were presumed to be fresh infections at the time of their first treatment with diarsone.

(iii) In a series of 23 malarial cases treated with a combination of vitamin and plasmoquine, only one relapse has been recorded. This case had continued severe abdominal pain during the first course, and plasmoquine had to be reduced to two thirds of the usual dose. Relapse occurred eight days later. The patient stated the second course well and no subsequent relapse has occurred.

#### XII.—THERAPY.

July of malarial—No form of symptoms that could be attributed to the taking of vitamin have been noted in any case.

Vitamin combination becomes slightly apparent only in a very small proportion of patients treated with diarsone. That it differs from the vitamin has been found in certain cases under plasmoquine treatment is confirmed in the examination of the urine when bile pigments and bile acids have invariably been found to be absent. It appears about the last day of treatment and persists for four or five days. The vitamin have never been affected in any case.

It has been observed that it is more evident in Europeans, especially in the members of the female sex. One woman aged 35, who was given a twelve-day course of vitamin in total of 51 gr, showed signs of jaundice in position on the 5th day. This continued until the fifteenth day or thereabouts after treatment had finished, and was noticeable for a further fourteen days. During the whole period the patient felt quite fit and developed no other symptoms. It has been concluded that this development is purely a deposition of pigment.

Several patients have stated that vitamin, in a certain proportion of cases, gives rise to abdominal symptoms marked by pain and vomiting. In a course of 148 benign tertian cases treated with vitamin alone and a single case suffered from abdominal pain.

In a course of 148 benign tertian cases treated with a combination of vitamin and plasmoquine, 17 cases developed severe abdominal pain, which may have complicated all malarial discomfort.

In the series of 42 malarial cases treated with vitamin and plasmoquine, 5 had sporadic symptoms necessitating special treatment and the continuing effect of the plasmoquine course.

From these figures it is evident that vitamin does not give rise to abdominal symptoms as they do not appear when it is not given in pure.

1 patient with phenytoin. It is also evident that the patients had a complete or substantial reduction in a number of symptoms (observed in the series of longer treatment) only treated with the combined sodium and phenytoin.

The abdominal symptoms appeared in over 14 per cent. of cases treated with phenytoin and sodium. Scarcely per cent. of these cases complained either on the last day of treatment or on the day following.

As first phenytoin was administered on the second day of treatment with sodium so that both the agents were completed on the sixth day when the cases were due to be discharged to day. It was found, however, that cases suffering from abdominal symptoms had to be detained for another day or two. The course of phenytoin was then begun on the first day of sodium treatment, so that there was one free day after completion of the phenytoin course before the patient was discharged to day. From such observations many cases had to be detained on sixth day, and some returned to hospital with abdominal symptoms persisting for three or to five days after being discharged from the sick list.

Painful as given in conjunction with phenytoin tends to prevent the onset of the pain, at least to some extent. After the onset of pain, however, continued with or her work up, or otherwise appears to give the greatest relief, but in all cases phenytoin should be discontinued for at least one week.

It is considered that the five days' course of phenytoin (total 0.65 gm. or 10 gr.) is the maximum dose under any circumstances that should be given in one course. One has not had the opportunity to give outpatient systematic examinations of cases which have been treated with phenytoin but one cannot help wondering when when one finds high blood pressure, abnormality, state in the urine, haematuria or even some in cases who have had phenytoin treatment it may even become more previously. Although one is not able to give concrete findings, one wonders that this drug should be used with the greatest care in the druggist that it is liable to do the internal organs may not become treated for a considerable time afterwards, and consequently it is likely to be associated with phenytoin.

Cases concerning severe abdominal pain have been considered, and one can starting with of spasm, metrorrhagia, etc. have been attributed probably to the extent of causing damage to certain internal organs.

As phenytoin is absorbed in the milk, it should not be given to nursing mothers unless the child is taken off the breast during the treatment.

#### VIII.—TREATMENT OF PREGNANCY

The comparative level of sodium and potassium per case is as follows. —

Sodium	One month's treatment (10 gr.)	2.44
Sodium Phosphate	One (10 gr.)	10.16
Phenytoin	Five days course (10 gr.)	10.00

Whether the drug used in sodium or potassium phenytoin is still regarded as substance abuse and not as being a habit abuse so that the test of phenytoin does not affect the comparison.

Artemisin at 5-10 grs per day is considerably cheaper than quinine (10 grs. 10 times a day) and when we consider that a similar course of quinine does not cure, but in many cases has to be repeated probably four or five times, makes the comparison between still more in favour of artemisin. It might be thought not unlikely that this is artemisin treated the time of failure is about four days less than in quinine treatment and that it is thus less lost in attending hospital but treatment after discharge is duty which in the case of quinine is continued for about three weeks. There is, of course, a loss regarding deaths in the hospital expenses (that is apart from the actual cost of drugs).

#### XII—GENERAL AND CONCLUSIONS

(1) The medical organization of H M Naval Base, Singapore is such, that all Arsenials, whether employed directly by the Admiralty or by the main contractors or sub-contractors, are under strict medical control. They are carefully examined on entry and during their sojourn on the Base, a detailed history of each man is kept—all illnesses and treatment are recorded and cases can readily be followed up after discharge from hospital.

(2) During the past fifteen months the writer has treated over 1,000 cases of malaria. Artemisin has been used for a period just over six months and over 500 cases have been treated with this drug.

(3) Observations on the result of quinine treatment are made and they correspond more or less to the general findings of workers who have used this drug in the treatment of malaria.

(4) Artemisin is easily administered either in tablet, powder, or liquid form. It leaves no lasting bitter taste in the mouth and is therefore readily administered to children. It causes no distressing rashes or the even photo-sensitivity problems associated, various gastric upset, diarrhoea, or general depression.

Cases under treatment in hospital are bright and cheerful.

Patients are discharged in duty fit and have not that lowered vitality which in the case of quinine treatment probably accounts in some degree for the frequency of relapses.

(5) The fluorescent test for detection of malarial in the urine, blood and sputa is not a satisfactory one unless the amount of malarial being excreted is considerable. Artemisin is excreted in sufficient quantity in the urine to give a positive fluorescent test in from three to ten days after treatment has ceased.

(6) The operation which does 0.05 grs or 1½ grs per day three times a day for five days.

Children given 0.100 to 0.200 tablets daily, and to obtain good results the full dose suggested must be given.

(7) Fifteen Arsenials, women and forty-two Arsenial children were treated in out-door patients.



Artemisinin was administered in full doses at various stages of pregnancy and no adverse effects were noted.

Artemisinin was administered to nursing mothers; it was found to be excreted in the mother's milk, and in one case was demonstrated in the infant's urine. None of the babies concerned showed any ill-effects.

Notes are given of a family of six children who were infected with benign tertian malaria which resisted all forms of treatment with quinine. Artemisinin appears to have been somewhat more successful although it is too early yet to state whether the parasites have been finally eradicated.

(vii) The variation in the percentage of haemoglobin in the blood during the course of treatment is in part due to rest and nourishing food. The persistence of the higher haemoglobin index is satisfactory and satisfactory.

(viii) In benign tertian infections all parasites disappeared from the peripheral blood after 6½ gms of artemisinin had been given over a period of two and a half days.

In subtertian infections all residual parasites disappeared from the peripheral blood after 1 gms had been administered over a period of three days.

There is a possibility that artemisinin may have some delayed action on sexual forms as they were noted to disappear later on the days when treatment had ceased. Plasmodium, however, gives more serious and quicker evidence.

(ix) In 50 per cent of benign tertian cases the temperature had dropped to normal within forty-five hours and there was no subsequent rise.

In subtertian infections the temperature dropped to normal in from forty-eight to fifty-six hours after the commencement of treatment.

There was no difference noted in the temperature charts whether the case was treated with artemisinin alone or in conjunction with plasmodium.

(x) The immediate effect on enlarged spleens during treatment was favourable. After an interval of some months 77·4 per cent of cases with splenic enlargement showed a marked decrease in the size of the spleen. This was also marked in the larger spleens.

(xi) Benign tertian cases treated with artemisinin alone showed a relapse rate of 10·7 per cent.

Benign tertian cases treated with artemisinin given in conjunction with plasmodium showed a relapse rate of only 1 per cent. It is doubtful whether it is safer to claim that lower relapse rate was a product of giving plasmodium along with the artemisinin in all benign tertian cases.

Subtertian cases treated with artemisinin and plasmodium gave a relapse rate of 4 per cent.

(xii) No toxic symptoms which could be attributed to the taking of artemisinin have been noted. Discoloration of the skin has been seen on several cases. In no case where artemisinin has been given alone have any discoloured symptoms been noted.

(xiii) A general remark is made on the probable danger of plasmodium.

and of the animal, or a variety of means of infection administered at once.

(14) Malaria is a considerably dangerous method of treatment than quinine. Even the smallest of the price of the drug, the saving of life and limbs and infection in the home led by the patient.

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- (58) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (59) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (60) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (61) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (62) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (63) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (64) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (65) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (66) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (67) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (68) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
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- (72) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (73) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (74) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (75) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (76) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (77) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (78) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
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- (82) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (83) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (84) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (85) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (86) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (87) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (88) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (89) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (90) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (91) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (92) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (93) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (94) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (95) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (96) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (97) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (98) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (99) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.
- (100) *Ann. Pathol. Bakt. Parasit.* 1901, No. 10, p. 100.

# EXTRACT FROM A MEDICAL OBSERVER'S JOURNAL IN THE YULI, 1876.

PORTLAND AND WOODBROOK, N. H. (1876) 1876. D.D.E., D.E.

**Arrived at H M S. —** July 1st (1876) at 10 A.M. The ship was not commissioned until a few days later. The ship's company was most complete, and consisted of five or six of men in could be called for—healthy, able bodied, and almost without exception being one or more good cooking bachelors.

<sup>1</sup> During our stay at Woodbrook most of the men had leave for seven days to ten days. Doctors then resided along the northern bank of the Tiscum between our and London. Woodbrook, as well as the greater part of London and the suburbs, were in yet quite free. On July 11 a large ship anchored in the evening about 100 yards ahead of us, and during that night and until Monday forenoon, the wind blowing almost constantly from the direction of the ship, an insupportable stench invaded the atmosphere all around, and which amounted to something unknown on board our. Subsequently it was found that the large was laden with putrid human do.

<sup>2</sup> Arrived at Portland on July 17, and then for Portsmouth on July 20. Arrived at Portsmouth on July 21, and left for Liverpool the day following, arriving there the next afternoon. I found Portsmouth affected with cholera, no less than a dozen having been removed into H.M.S. Three took in 7 tons of water to complete. Arrived at Liverpool August 2, and after anchoring at Torquay, arrived on August 4, and I found cholera in the locality. Again completed with water by 4 to 5 tons.

<sup>3</sup> Arrived at the Coast on August 9. On the next two days two cases of cholera reported, but with fatal terminations and numerous outbreaks the result of several successive cases. Two days later another case appeared, and from that day forward cases daily presented themselves. On the 17th the number of cases increasing, I had the cholera patients compelled to use the Captain's deck round house. The Water-or-drain also had instructions to limit the Sick Bay men so far as he could in seeing that all the cholera cases did use only the latter. On the 18th an identical case was placed in my hands, I followed it out, expressing on the party almost especially, what I had urged upon all with whom I came in contact, viz. the advantage of constantly compelling to come down to me any of these symptoms known to be at all loose or otherwise unwell.

<sup>4</sup> The cholera during the attack was of peculiar character, and almost always of abdominal type, with diarrhoea, or rather close longer with or no pain, severely dry diarrhoea of the stomach and moderately copious watery, light coloured stools. A few accompanied of vomiting pure to the bowels relieved by water and cold compress and a little subsequent diarrhoea. Most of the cases were treated without being placed on the Sick List, being

supported during the treatment by ice and compresses to avoid the use of opiates. Now we aimed the mouth-syringe on them as they coughed together in the sulcus of the trachea. It was, however, a pretty severe but was quite readily absorbed by suction. Cough attacks and spasms were, indeed, used and with good effect, as long as the chest lasted. Open-mouths, in addition, with a thin catheter, was then used and when they also ran out I had recourse to Anesthetics of Lead, Alum or Turpentine.

"On the 13th I made enquires about the specimens and found them all of most excellent quality (as they have been during the entire period of the disease). On August 16 and 17 examined the water and found it stored in the stomach, the greater part of it apparently quite good. One specimen, however, which was brought to me had an unpleasant favour, distinctly perceptible to me but superseded by others. I found two of the five tanks impregnated with one of them strongly so. Two tanks of the red one of greatest convenience for the ship's bottom were stored over the tanks: these tanks were fully filled and the contents bubbled out and leaked down the sides. In this manner a leak must have found its way into the tanks. Anxious to know where the bad specimens which were brought to me had been obtained, I made a series of enquires which resulted only in stating that the chief of the Captain of the *Held* (at least, the change of the tanks) had been told by him or one of the ship's company and in each case for about pounds. At the time of the change the duties were performed by a black man. From the confused and somewhat conflicting statements that were made it seemed to be sufficiently clear that the ships had discharged 15 tanks, of which 14 were kept on the other tanks: that having completed at Westwick the five tanks only were used before upon re-appearing at Portsmouth: that in a similar manner the five were required to complete at Plymouth had also been poured into the five tanks: and the greater part of the water had run from the five tanks; the specimens drawn from the other tanks were quite good to all appearance. I therefore advised that the five tanks be emptied by pumping the water down overboard and the tanks thoroughly cleaned and whitewashed. In doing this, the water was found at the bottom of the most strongly tainted tank. Therefore I wanted to see the water from the other tanks and the duration, morning. I advised that all the remaining water be utilised in washing purposes, the remaining tanks to be again cleaned and disinfection commenced. Therefore ceased almost immediately on commencing the use of distilled water. I could therefore only approve the first attack party in the known risk and management of the tanks leaked, and partly to the property of the water as shown by the effects of some from the rain water which is all creditably pure and appeared to be very good. In consequence of the management and the fact that we had previously used Westwick water with impunity I could not believe the supply from that place was at all so close.

"The largest of divisions of presently the 'gas' character consists of 1 again and rapidly repeated. Consequently with no compensation a fast attack was perceived in the spirit room. The next day the ledge beneath the room was found to be charged with paint, obviously smelting, staining filthy food, with a thick deposit of black, offensive, dense coated with wood shavings and often appeared to be taken and used instead. I had frequently seen the ledge forward when open for inspection, and saw everything in connection with there as a most probable solution. I have found that the ledge was separated by iron partitions into compartments and communicating only by doors of about four inches square and at six to eight inches from the bottom of the ledge, and sliding vertically so as to be provided is caused by a handle protruding to working with the ledge. Each compartment also has its ledge divided by transverse partitions of about four to five inches high, two inches in diameter and as much as two inches, the lowest part of the ledge. The afternoon compartment beneath the spirit room is small, unheated and accessible only by starting out the spirit. The next compartment below is large, divided as above and opened by the other tanks, wholly inaccessible and only to be closed by raising the sliding doors and pumping water in and out, when any gurgles sufficiently light on so to see water might possibly be mistaken if not in any degree different. Until now, hardly proved by the state of the ledge, the power of pumping through, as it is improperly styled, was considered sufficient. After removal of the paint from the afternoon compartment the doors were opened and water repeatedly pumped in and out. After several hours pumping, when it had apparently done its utmost, a weak solution of chloride of lime, was poured in and allowed to remain for nearly two days. The pumping was then reversed and the whole finally washed with one chloride and afterwards.

"While looking upon the above state of things as a probable cause, I wondered in what manner it could render the water in the tanks available without affecting its valuable qualities, and how it could serve the dinner staff without becoming more and more apparent by its mere attack, and without affecting more particularly the officers and others, shall who were almost exclusively exposed to its emanations. I learned from the Captain that the ship's company were again using English water. I found that the Captain of the ship was unable to tell whether the water had been distilled or was shore water, or whether all the English water had been used or not. It appeared pretty certain, however, that one of the undistilled contains a mixture of English and distilled water that had been restricted to washing purposes and that lately it had been used for drinking. I then advised that the water should be drawn and filtered the tank again cleaned and the distillation should be commenced. It was done. Distillation again subsided and very rapidly ceased. I again urged on the Captain the propriety of examining the ledge beneath the tanks as soon as possible as shavings and other refuse collect so that found

under the agent room, must probably exist there also in equal or greater abundance, the shavings having come there fully evidently by disordered carelessness, which was not likely to be limited to a leak in two only.

The cleaning not having been repeated for these tanks, I again requested the Engineer-in-Chief to command the Captain of the machinery, but it was well delayed on the plea that the last cleaning was very thorough; that there was no evidence of any fuel leakage; and that the Carpenter's Mate and the Engineer reported the after bulk above as far as they could judge by the sound of the ordinary "pumping through." On September 21, however, a check was poured on the agent room, and the next day the place was again cleaned and the bilge beneath found full of oily fish, but evidently from its volume and sounds due to great oil leakage flowing from beneath the tank through the sliding door. After again pumping in and out the several times the place was repeated above the compartment under the tanks cleaned. Before all was again shut up I examined the place myself and removed, through each of the little doors, chalk and before the water a handful of chalk, shaking them and other matter in that found in the agent room compartment previously, and took the same on deck to the Captain again urging the necessity of a thorough exposure and cleaning out of thoroughly of weekly washing, until opportunity for the difficult operation of discharging the tanks presented itself. During this time no disasters occurred, although water from the after tanks ran in one. I examined the water several times and found it of good quality, so far as could be judged from its sensible properties. One specimen was brought to me again, which had a very distinct flavor of kelp, when the water from and from it became quite nauseous so one could tell. Several specimens were then produced from the tanks, and all seemed to be good. From this date to December 3, through the bilge and recovered cleaning there was no complaint of the water. From November 2 to 22 the water was below 22 tons and the after tanks necessarily in use. Upwards of half the quantity of the water in these tanks was used during the period with impunity. From November 22 to December 3, nearly two thirds of the contents of the after tanks were again used, with almost equal impunity. On October 7 one case of diarrhea occurred, but with highly flavored bouillon and eggs of overloaded stomach. Between November 22 and 26 four cases were entered of which two were cases of colic from ships' diet as Erasmus. The other cases were of excessive action of the liver with slight but annoying pain in the situation and in 12 highly bilious eructations in the twenty-four hours. A few cases, similar to the last and not appearing in the return occurred about the same time and since a diarrhea evidently were due to climatic conditions.

At Annapolis, December 5, the whole of the after bilge was exposed by the removal of the tanks, and found full of that black water with a thick deposit of refuse such as required, and completely blocking up the little under holes. It was thoroughly cleaned out and treated with kerosene, it was well characterized.

The tanks had been covered in three feet and six inches, the masting now being only six inches, but the side rails being covered with a deck of a thickness of less than three inches, and so such an extent as to leave less than a fourth of the mouth of each tank within reach. In only one case, in fact, to about the end of the pumping lever. Two of the tanks containing all three feet and six inches failed to be fairly clean with merely the thin rusty deposit usual to tanks. In three others bits of various kinds, e.g., pieces of shingles, decaying board etc., with a thick layer of mouldy deposit of offensive appearance. In the remaining four appeared a layer of sediment of  $\frac{1}{2}$  to 1 in. thick and of offensive appearance and colour and mixed with a few dark, more partial wood shavings, scraps of paper etc.

Thus then, probably was the cause of the diarrhoea, very probably the side rails of the covered stacks and most probably failing to produce sufficient heat because the great side tanks were practically allowed to remain in the last or each of the subsequent occasions of use of the side water, or were used simply for washing purposes. It explained also why the water continued to apparently appear to be good and why the responsibility for specimens which occasionally turned up, failed to be traced to their source.

Since the above was written I have discovered in the Log a little information which I had previously failed to find either there or elsewhere, viz., that from August 10 to 11, during the first attack, the water was reduced to less than 10 tons, necessitating recourse to the after tanks, and that at one portion of the period the quantity fell to 7½ tons. All my suspicions as to the impurity of the water received at Plymouth or Portsmouth, and even as to the effects of the evident mismanagement on board, were therefore rendered reflexion. The water found on the ledge could only have arrived there before the ship was disconnected, and most probably in the daylight. (Notwithstanding the offensiveness I cannot from the facts alone conclude, distribute the diarrhoea to that cause, for the ledge has been extremely offensive at times when no diarrhoea occurred even in the men employed in cleaning it, or in the officers and other men exposed to it. The shavings and the other bits discovered in the side tanks which seem to me to have been about the size some of the deers, very probably found their way there in the early days of the attendance, principally owing to the fitting of a large and hot overboard; other additions may have been made from time to time by accident. No neglect can be charged upon the Captain of the *Blind* as far as the side after tanks were concerned, as means for any purpose was difficult, and cleaning impossible.

To prevent any such state of affairs in the future the deck might have been not being and the hatches enlarged a few inches on either side. This would still leave the ledges unserviceable if all the tanks were replaced. Another plan for the old after tank, was adopted. The shavings of water shall was altogether done away with, the under row of tanks removed and the side tanks kept for the storage of fuel and other pro-

**Notes** The chair helps (1) is equally open to inspection in all cases, with the exception of the small counterexample beneath the third item.

The ship having reached San Mateo and remaining in quarantine for work at Tambores entered at Puerto Lencoe baptizing 25. Most there (11000 French and being a considerable river port on board and leaving from the Goodnight Company (111th) that it was customary to use the mud and other steps to give prophylactic dose of quinine on board. In return, and in these waters, I supplied every man with mud on board with 10 grains daily during our stay at Puerto Lencoe, but finding my supply allow gradually disappearing I stopped it, so as being to try on some experiments. I still and used I could procure a supply sufficiently large to allow me to supply it twice on the healthy and without anxiety for my probable work on the same. I did so the more willingly as I wholly doubted in any previous points of the drug containing equal sufficiently warranted in such cases to the facts observations and strong opinions offered in the matter by the American Population by most residents on either coast, and by many professional observers of epidemics in India. During our stay at Puerto Lencoe most of the sick-on shore and on board were frequently on shore more protracted after death. The on board a moderate distance from the shore. I procured there a female and a few short very heavy rain as we sailed the wind blew there.

— Arrived in Jaffa (Cairo) October 17, when by order of the Senior Officer I developed the superannuated on the bank first to H.M. 1 and then and drew from Assistant Surgeon Moschis 1 on quinine made 1 two days later until several of Little Papa (H.M. 2) seemed well to swallow 11, continuing each night from 1 to 3 miles or further off shore and during the day either way and at a greater distance. During the period October 1 to December 1 we had one or two days hardly lasting more than half to two hours, and on a constant accompanied by the phenomenon of a subacute periodic but more frequently by gastric distress, but more often from the distress of the land. During the same we Surgeons varied the shore with the exception of five others, of which three made three or four more, and on one occasion kept the light on the two banks inside the mouth of H.M. 1 (Jaffa). Of the three, one was present, visited Jaffa and suffered much during the boat voyage from Little Papa and bank. He and another of the three suffered from violent vomiting twice shortly afterwards.

[4. table is given of the dates of the appearance of eight other cases of constant fever which appeared amongst the men, and it is noted that the first case occurred there (not here, also having been taken)]

Teacher case appears on the Sociological evidence, but did not belong in the ship being mostly a consequence from H M S. Evidence for paragraph 10 in the Hospital. I had some doubts as to the propriety of placing it in the evidence on my list, but the instructions coming from the ship were not to withhold the material.



(4) *Uncomplicated Fever* two cases appear in the November. One was a representative for passage to H M. She was sent on a motor car passage to Ancon, and both had suffered from ague, all day, before leaving, the ship being sent that in fact had a little out of order and did not sail till the day after the night before. Malicious doses of quinine were given and on fever being observed they were sent to ship after the lapse of six days.

<sup>1</sup> In the thirteenth case I adopted the mode of treatment recommended by our best authorities, viz., that of administering, after three purgatives moderately large doses of quinine (30 grains, followed by 2 or 3 grain doses generally or repeated if necessary) so as to produce some reduction of temperature within the first two or three days, and without any nausea or merely confirm regard for the stage or character of the fever. One column and sulphuric acid were only as cases of very high pyrexia, in all supplying an allowance of lime juice, or water which was preferred by some to any other drink and even used soup for diet. Once we were during the continuance of the fever except in cases of decided delirium, but supply stimulants freely during convalescence. Fortunately I happened to coincide with some of the more distressing difficulties of the disease, such as severe irritability of the stomach, hiccups, positive delirium or important renal complication. In one rather severe caselessness was produced by the first dose of 30 grains. In the others no symptoms of caselessness manifested themselves until the second or third day. In one only did I find it necessary to repeat the emetic dose on the evening of the second day and the resulting caselessness was not great. In these cases decided symptoms of delirium were such as of noise in the ear and the quinine was stopped without effect. In each of the cases thus treated the fever returned very decidedly on the seventh day after the first dose. The subsequent stages, however being much milder and of shorter duration the fever subsiding altogether on the third or fifth day. During the following fortnight the patients continued weakly, the pulse uniformly frequent, soft and readily compressible. All, however, were able to resume their duties with advantage within a month of the recovery, a month day not exactly to the exclusion of the influence of the fever but attributable also in great part to the vigorous combination of meat and the sulphuric. Some of them, during convalescence were landed at Ancon. During our stay there, as we arrived with only six provisions and there was no hope of supplying for four days and the ship was about to visit the coast I expected would be easily located as well as pleased by a landing party.

<sup>2</sup> Represented Ancon from November 2 to 14 and three completed with medical stores to one year's allowance. Shortly before sailing the convalescents were received from hospital together with several superannuated the passage and some for duty and sent from H M. Board Ancon. One latter I found was with an oblique inguinal hernia of large size, and another with a small parallel hole in the right groin the result of recent primary syphilis, and likely to suppurate. As the cases were serious

At the hospital I applied for their discharge to H. M. S. Fives as sick leave for healthy men of whom there were plenty reporting the same case as the case now in court for further service. By order of the Commission I had to send the letter to hospital and the letters were to H. M. S. 45 explained to the Treasury also. Captain and his First Lieutenant were taken to Nijmegen and on returning were captured in the east. In the same manner the others attempted to steal everything they could by hands on from Fives, running off with some gear, was followed by the Captain, who was finally able to come up with him, shot him with a small pocket pistol and put him under guard to get away as quickly as possible but when eventually to shove off were attacked by an armed body of natives, who took a short time to take down the boat. The boat succeeded in escaping with only one wounded. During the following months with all boats were captured and seized and next morning opened fire on the villages. The natives having cleared out, our party landed and burned several of the villages, shooting a few natives, I believe. They returned in the evening. It is again only had breakfast and run for the day. Two days afterwards the day after I ended to argue about the nationality of the factory which he had found and burned down. He found all the factories broken into and a different the owner told us their loss to him. He found another village of this and had some goods with natives amongst the natives in the distance. I found a small factory of an English factory which was reported to be situated somewhere in the Northwest, we then proceeded to search for it and on January 25 landed our army again, searched them over but did not find it in progress, and on returning had one. It was a wounded and one boat captured in the east. Next day they were again landed and then landed several miles along the coast, found the factory quite safe. On each of these expeditions the men were mainly employed under arms in a running war, in a mountainous country in an unhealthy season, and without a good boat breakfast till a late supper on their return to the ship with the exception of a few men having some breakfast and by not appetite for a day or two and a single case of disease could be attributed to it.

Only four days fresh meat was served out from January to May, and the human waste was very bad. It only for manure was used. A large quantity was consumed and thrown overboard. It seems to me that, however, with the remains of the natives before them, their knowledge do not adopt some means of preserving the food. Finding it in environment we ought not to waste it in the best way in the end, the cheapest. Under the present system of enormous proportions is utterly lost and the immense value of the materials delivered very materially. No vegetables could be procured during the period, and the trade with the natives in goods, though a few were refused to accept nothing by the natives themselves inspired by the Captain. The men especially would rarely clean up. In March and April the day was short, a late party and the men put in trouble.

land would get some of our provisions, but they were not allowed to do so, and we were obliged to leave the provisions on the ship.

The weather was somewhat better, although it was still very common to have during the five months we had only twenty five days on which rain fell, and none of it was heavy or of long continuance. The dry was the season that the weather decided a famine amongst the natives, but in April, towards the end of the rainy season, a considerable quantity of maize fell inland and particularly to the Northwest of us. The boat was very good and though the sea blazed upon us, we were not wet by land or wind, the Captain persisted in refusing to spread awnings until ordered to do so by the Captain of H.M.S. *Agassiz*, to whose humane and kindly advice I partly attribute our Captain's better feeling towards the natives during the latter part of the period. The season was ended by a very healthy outbreak at Barua and at parts of the Congo, much fever occurred amongst the natives and the merchant shipping.

On arrival from Ansovuwe we called at Barua, stopping two nights on the coast against my advice. We then proceeded to Barua, a head off a Dutch barge which had gone aground there. The men were heavily loaded here for nearly sixty men being close to an ordinary, dark red and red-brown color. We then proceeded to Loupo and Kainadi, each of which bays we anchored for two nights and a long distance from the shore, which was visited only by the Captain myself, the Yeoman and the black crew. On return to the Congo February 15, we found the *Palmer* with several cases of fever amongst their Ansovuwe Surgeon, Wrecked, in an extremely low typhoid state. Our ship proceeded into the creek for coal, where the agent consumed two nights. During our stay I saw Wrecked several times and on February 17 disembarked him voluntarily supposed to take care of himself. We accordingly asked for Ambrosio, whom we were employed for the remainder of the period. The portion of the Coast I believe to be the healthiest station in any part of the Southern Division, and solely for one reason, viz that ships frequently anchor miles from the shore and in only a few days a much commoner case is allowed. Some ships I know disregard the orders of the Surgeon Officer and anchor as close as possible, even to 5 fathoms, which though useful to the ship in certain seasons, still gives a considerable distance to the shore. During our stay we were anchored at less than 3 fathoms and were low water off. In other parts of the coast in question the anchorage is much closer to, yet at all at, at a long distance off the shore. Though employed here from February 15 to May 15 only two cases of fever occurred and they occurred eleven and thirteen days after a night when an Ambrosio in the persons of the second master and a white crewman who were wrecked and the Master paid a visit to the factories there. A third case of fever I must say, appeared nearly three weeks after a residence of several days without fever at Ansovuwe, but as it took place whilst on the boat for a gun shot, it need I have not included it in the foregoing.

strongly believe that I should properly support them even though the national economy is in a serious decline.

—The atmosphere, where I have contributed to the struggle and especially in the creation of Russian youth. The same method of work, using their own words intelligently. It is necessary when always work is required for the first time. I have it now I believe, as well as the next some moderate degree. It is on the theme and the importance of the first were different others. It is estimated on board on the day when we who did not go with the ship, and working part of the world. Russia, and perhaps and then we were I have and we in short and I am with under halfway, somewhat more. The date of attack, then, I think, the day when came on our two boats—the last from Russia, 22 or February 11 or from our 10 to 12 days after our arrival in Moscow, 1917. The second Russian to twenty-one days after our arrival arrived in the South when our ship was on the way to the sea in the sea.

\* The Boston Office unfortunately issued a 1975, star order which should have been issued long before 1972. This case of H.M. Ship should be kept a secret case and in the Court's hands.

On leaving Birmingham in January, some of the men were employed in printing shops. One was at work with two of large type-cases, six large letter cases, many elegant proof-cases, which demand by at least two-thirds the constant power of the handwork of an enormous French country blacksmith. Six or eight copper-plate printers, six bed-plate makers, six brass, six, promote the movement of a field of strong wire, most unpleasant to the eye to the perfection and to use at least, a positive torture. Then, while the men are obliged to lay on under a tropical sun. That, was attacked by six independent blacksmiths. I say independently, from the evident difficulties of the work as well as the strongest light and heat, and the

there, not very good characters, and complaint of blindness at night when the pupil appeared to be perfectly normal when asked about, with no further findings, and when I returned to work on the last night the appearance of some better evidence of disease, evidence which I now obtained. However, gradually recovered on withdrawing the lens exposure to the light, probably owing, I suspect, to the eye on being exposed to the light, is weakly, and supplying them with quinine, etc. for the relief of hunger and fatigue with a view to the treatment and recovery, because of the lesion. Whilst preparing for the removal of the lenticular, three more of the same material in two individuals, and another from the same cause, taken in the case were on the account in great part produced by a disease.

\* Notwithstanding the total absence of fresh vegetables or fruit during these five months no symptoms of scurvy were observed. A number of chronic phlegmons with much unhealthy congestion and tendency to suppuration (e.g., those I long ago pointed I supplied everyone with the cod, tea, and a few who were not exempted from soup with an extra allowance of kumzoo after with even a second extra dose which they took gladly.

The first attack passed again a short time, however, and he was accompanied by third assistant and six colored assistants without me (at 11) some symptoms of acute dysentery developing in one case of considerable gastric disturbance alleged to Hydrogenæ acid in two cases some threatening effusion of the lungs for a day or two and in a fourth complete crisis with delirium tremens. In all the commonest was manifest the first attack of the fever being slight fairly perceptible very high on the second day lasting two to four days. In all cases there was fairly good as a whole only when the stomach was terrible were morphia or laudanum drugs employed, and then only on the days of after coming down of course of symptoms in stomach, and I believe with no beneficial effect to stomach a more general one. (The medical officer then details his procedure in the use of quinine which is substantially the same as described in an earlier part of his Journal.) As soon as possible the appetite was directed with doses of Beef and Chicken Broth. It usually required some days for the tongue to clear and the appetite to establish itself. Once fairly under way however they ate voraciously. It took two to three weeks to stabilize them, with any delay in stabilizing the fever dates of the ship at that time. To a few I gave scrupulous care or recommendations as far as my small stock would allow. None was allowed to desert the quinine until the health appeared to be fairly established.

[On May 25 the doctor was appointed to H. M. S. Pioneer to supersede the medical officer of that ship, who directly refused to accept although he had had another very severe attack of malignant fever. He evidently returned a separate Journal for the period on this ship, for on his reporting his assigned ship on September he mentions at the time and from which this statement is taken.]

"On September 26 after four months more fully and pleasantly arrived on H. M. S. Pioneer. I resumed the ship which had just arrived from the Dolphin, where she had suffered much from fever and the want of fresh vegetables food. The epidemic state of the crew struck me at once. In a few days a dozen or more complained of soreness of the mouth, which in two nights he attributed to effusion of the teeth. Yet all presented a swollen and suppurated state of the gums, the least tenderness which caused a lancinating pain which was liable to cease. The swelling was not great and resembled the effect of Mercury. The general condition was not so bad as I should have expected on the way of an attack of scurvy. Nevertheless I reported to the Captain my apprehensions of an approach and advised a visit to Laredo. He wanted the Commodore whose arrival was expected daily but I scrupulously got him to make an early shipment of lime juice to all hands daily. The Commodore came along on October 17 and gave no permission to proceed to Laredo on October 21. There is free supply of fresh beef, mutton, potatoes and pumpkins were served the several days. The crew also purchased a large quantity of oranges, lemons and beans. The oranges were large and sticky,

as the result of my period, and would be, the principal cause of some severe indispositions which I had to treat. We again visited St. Pauls on October 24 and took on board some Indian and vegetables, and on the same day we sailed for the Cape of Good Hope. The Indians proved to be either starving or diseased; the flesh was very dark, contained no fat, was soft, flabby, easily breaking down under the finger-nails and broken, and containing when cooked. The greater part of it was condemned. The potatoes and onions lasted several days, and the men very rapidly improved with the fresh provisions, the pleasing anticipation of the Cape and the ever-present influence of a cool, healthy and exhilarating voyage. During the greater part of the voyage, therefore, it was considered unnecessary to compare the rates made of these parts, the men especially in the symptoms which led to the appearance of scurvy had disappeared very rapidly.

On arrival at Simon's Bay I learned that there was far almost the first case of epidemic in the shape of typhoid or typhus fever, which had been very fatal, though it had manifested no violence and in frequency. I at first requested the Captain to allow us leave and it was accordingly stopped, and it was found that the other ships gave leave freely and that H.M.S. *Osborne*, which had been here and had given regular leave during the height of the disease, had only two doubtful cases at the Cape and none whatever on the voyage back to the West Coast. Little was then gained without celebration and without reference to any medical authority as far as I knew. For some time I treated the men with much anxiety, until I found on inquiry that some of the more advanced medical officers, including Deputy Inspector-General Miles and other medical men looked upon the fever as non-infectious, a species of remittent, or best of low and so-called typhoid type, in spring cases assuming some of the more striking characteristics of the true typhoid fever and in some cases taking on a remittent type especially during its decline and its convalescence. The appearance of the ship notwithstanding there was of the thing as no case occurred.

The ship was headed up on the patient ship, December 12, and there remained until December 26. The men had a great deal of agency in changing her for the purpose, and in refusing, replying and restoring her afterwards. They had a splendid fellow for a captain and they worked like devils. They got a very fair allowance of leave in turn, which I was pained to say they did not want. I could not have believed that any ship, even after an improvement of symptoms, would be so on the 14th, most of which was squandered by everything which ran into our life enjoyment, could conduct themselves so respectably when on leave and with an abundance of money. However, Town residents complimented them for their admirable deportment. In a very short time the fellows resumed the appearance of robust health such as to be envied scarcely in a house party in summer. We had not a single case of primary venereal disease during the period.

Epstein's letter.—[From the *London Lancet*, 1911, December 16th; the letter was a painstaking and painstaking account (1911) and there is more than a little evidence to show that he was, indeed, that in his responsibilities in the prevention of disease in subjects the advice he gave as to the closing of the water tanks and the stoppage of fresh water and also the advice as to the drainage. The stop should rather have been shown in medical literature. It is a matter of interest that he notes that usually the personnel were never advised after dark, though he was assured that the fact contributed to the comparatively small number of cases of fever which he returned.

The notes on his cases, which are set forth in very legible handwriting, are very clear and to the point, and he shows himself to have been a good surgeon.

He was evidently a great admirer of the British manner of those days.]

# Clinical Notes

## NOTES ON *SCALDHEAD* IN JAPAN

By ROBERT LUTHERUS CRENSHAW, M. A. DUBLIN LOND. W. B. 14

### [1] *Scaldfestness* (Horn)

Scaldfestness with *Scaldfestness japonica* is frequently met with in the valley of the Yangtze River at such places as Shanghai, Fuzhou, Chongqing, Hankow, Ningbo, Wuhu and Harbin.

Cases related to this were studied during 1909 to 1911, while the author was working on this river.

This condition passes as "paddy boils" when met in extremely infrequent. During spring transcriptions of the young rice plants is marked out in places which has been marked mainly with human figures, often obtained from individuals infected with *Scaldfestness*.

In many specimens are fully aware that "paddy boils" especially in spring time, are a potential source of *S. japonica*. These plants generally undergo in 10 to 15 days, as possible at this time of year. The most of "scalds" incident out of "paddy boils" is generally noticed, and it is usually necessary to reach through the latter to reach the paddy, hence the condition may be a local one is difficult to avoid.

In China, physical shooting, compared with some shooting, is not least, such as much danger as it is regarded as very open country where the ground is constantly dry, and therefore inevitable to a local for *S. japonica*.

### [2] *Scaldfestness* in *Scaldfestness* or *S. japonica*

The main *Scaldfestness* has a treated green surface completely in which the *Scaldfestness*. The main *Scaldfestness* contains of *Scaldfestness* which appears in the fresh water pond, *Scaldfestness*.

One of *S. japonica*, *S. kumamoto* and *S. japonica* may be differentiated respectively by a broad outline tubercle, a terminal cone or a broadly rounded spine when transferred microscopically. One of *S. japonica* tend to be shorter than those of either of the other types.





depending on whether  $\gamma$  is even or odd, we will have  $\gamma$  and  $\gamma + 1$  as the number of vertices in  $\mathcal{G}$ . For the odd case, we have

<sup>10</sup> All drinking water consumption. To study water intake, a 24-hr, stepwise diary was filled (1000) having used the following message: "Before going to bed, you are required to indicate water intake containing by glass, cup, should be 1 liter".

*Illustrations may be made by hand-drawn, computer-aided, or other means, and may be in color or black and white.*

Perhaps the most important preliminary measure would be the institution of parole boards, reminiscent of the one in Illinois, based on information and special social observations in the case of any individuals who seem to be delinquent. If necessary, use of special courts, or juries, would suggest an increased social responsibility.

The pleasure of the review of my testimony will vary, directly with the interest which has attached between ourselves and the cause.

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Case 2.—Dance, April and May 1911, with superdischarge of Clonidine, he develops hypoglycemia marked with hyperkinesia and tremor. In June he had diarrhea and white gelatinous stools again continue. Temperature, 37°; respiration 20, pulse 74.

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zusätzlich	24	mit	druck					

1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	2030-2031	2031-2032	2032-2033	2033-2034	2034-2035	2035-2036	2036-2037	2037-2038	2038-2039	2039-2040	2040-2041	2041-2042	2042-2043	2043-2044	2044-2045	2045-2046	2046-2047	2047-2048	2048-2049	2049-2050	2050-2051	2051-2052	2052-2053	2053-2054	2054-2055	2055-2056	2056-2057	2057-2058	2058-2059	2059-2060	2060-2061	2061-2062	2062-2063	2063-2064	2064-2065	2065-2066	2066-2067	2067-2068	2068-2069	2069-2070	2070-2071	2071-2072	2072-2073	2073-2074	2074-2075	2075-2076	2076-2077	2077-2078	2078-2079	2079-2080	2080-2081	2081-2082	2082-2083	2083-2084	2084-2085	2085-2086	2086-2087	2087-2088	2088-2089	2089-2090	2090-2091	2091-2092	2092-2093	2093-2094	2094-2095	2095-2096	2096-2097	2097-2098	2098-2099	2099-2100	2100-2101	2101-2102	2102-2103	2103-2104	2104-2105	2105-2106	2106-2107	2107-2108	2108-2109	2109-2110	2110-2111	2111-2112	2112-2113	2113-2114	2114-2115	2115-2116	2116-2117	2117-2118	2118-2119	2119-2120	2120-2121	2121-2122	2122-2123	2123-2124	2124-2125	2125-2126	2126-2127	2127-2128	2128-2129	2129-2130	2130-2131	2131-2132	2132-2133	2133-2134	2134-2135	2135-2136	2136-2137	2137-2138	2138-2139	2139-2140	2140-2141	2141-2142	2142-2143	2143-2144	2144-2145	2145-2146	2146-2147	2147-2148	2148-2149	2149-2150	2150-2151	2151-2152	2152-2153	2153-2154	2154-2155	2155-2156	2156-2157	2157-2158	2158-2159	2159-2160	2160-2161	2161-2162	2162-2163	2163-2164	2164-2165	2165-2166	2166-2167	2167-2168	2168-2169	2169-2170	2170-2171	2171-2172	2172-2173	2173-2174	2174-2175	2175-2176	2176-2177	2177-2178	2178-2179	2179-2180	2180-2181	2181-2182	2182-2183	2183-2184	2184-2185	2185-2186	2186-2187	2187-2188	2188-2189	2189-2190	2190-2191	2191-2192	2192-2193	2193-2194	2194-2195	2195-2196	2196-2197	2197-2198	2198-2199	2199-2200	2200-2201	2201-2202	2202-2203	2203-2204	2204-2205	2205-2206	2206-2207	2207-2208	2208-2209	2209-2210	2210-2211	2211-2212	2212-2213	2213-2214	2214-2215	2215-2216	2216-2217	2217-2218	2218-2219	2219-2220	2220-2221	2221-2222	2222-2223	2223-2224	2224-2225	2225-2226	2226-2227	2227-2228	2228-2229	2229-2230	2230-2231	2231-2232	2232-2233	2233-2234	2234-2235	2235-2236	2236-2237	2237-2238	2238-2239	2239-2240	2240-2241	2241-2242	2242-2243	2243-2244	2244-2245	2245-2246	2246-2247	2247-2248	2248-2249	2249-2250	2250-2251	2251-2252	2252-2253	2253-2254	2254-2255	2255-2256	2256-2257	2257-2258	2258-2259	2259-2260	2260-2261	2261-2262	2262-
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Global aggregation (and aggregation by region) is applied, and the parcellated series (2 and 3).

[illegible]

Keywords: *Shylock*; *antisemitism*; *antisocial behavior*; *antisocial personality disorder*

Keywords: *Chlamydia trachomatis*; *Neisseria gonorrhoeae*; *Trichomonas vaginalis*; *Herpes simplex virus*; *Human immunodeficiency virus*

On June 17 1993, delta was above temperature EFT thresholds for all study fish, however, and only *T. triostatus* and *H. aeneus* were higher than all eight critical modes. Some liver pathology (e.g., and spleen smaller than normal) (Table 1, June 9, 1993, temperature 18.0°C) (temperature 50 mals 50

Allyl	W 10 C	25-300	N 10 C	14.25 000	homopolymer, 50 per cent.
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Initial agglutinations test negative for syphilis and paratyphoid fever (Table II).

1994, considerably more of use of 5, especially

[illegible]

254 H.—Larvae Nos. 1 and 2 occurred in British Columbia, among the Vancouver River Valley. Both were submitted to the British Columbia Museum in June, 1921.

[illegible]

Alkaloid:  $\text{C}_{17}\text{H}_{15}\text{Cl}_2\text{N}$  (M 300.1) IR (KBr): 1640, 1600, 1580, 1540, 1500, 1480, 1460, 1440, 1420, 1400, 1380, 1360, 1340, 1320, 1300, 1280, 1260, 1240, 1220, 1200, 1180, 1160, 1140, 1120, 1100, 1080, 1060, 1040, 1020, 1000, 980, 960, 940, 920, 900, 880, 860, 840, 820, 800, 780, 760, 740, 720, 700, 680, 660, 640, 620, 600, 580, 560, 540, 520, 500, 480, 460, 440, 420, 400, 380, 360, 340, 320, 300, 280, 260, 240, 220, 200, 180, 160, 140, 120, 100, 80, 60, 40, 20, 0.  $^1\text{H}$  NMR (CDCl<sub>3</sub>): 7.8 (d, 2H, H-6, H-7), 7.6 (d, 2H, H-5, H-8), 7.4 (d, 2H, H-4, H-9), 7.2 (d, 2H, H-3, H-10), 7.0 (d, 2H, H-2, H-11), 6.8 (d, 2H, H-1, H-12), 6.6 (d, 2H, H-13, H-14), 6.4 (d, 2H, H-15, H-16), 6.2 (d, 2H, H-17, H-18), 6.0 (d, 2H, H-19, H-20), 5.8 (d, 2H, H-21, H-22), 5.6 (d, 2H, H-23, H-24), 5.4 (d, 2H, H-25, H-26), 5.2 (d, 2H, H-27, H-28), 5.0 (d, 2H, H-29, H-30), 4.8 (d, 2H, H-31, H-32), 4.6 (d, 2H, H-33, H-34), 4.4 (d, 2H, H-35, H-36), 4.2 (d, 2H, H-37, H-38), 4.0 (d, 2H, H-39, H-40), 3.8 (d, 2H, H-41, H-42), 3.6 (d, 2H, H-43, H-44), 3.4 (d, 2H, H-45, H-46), 3.2 (d, 2H, H-47, H-48), 3.0 (d, 2H, H-49, H-50), 2.8 (d, 2H, H-51, H-52), 2.6 (d, 2H, H-53, H-54), 2.4 (d, 2H, H-55, H-56), 2.2 (d, 2H, H-57, H-58), 2.0 (d, 2H, H-59, H-60), 1.8 (d, 2H, H-61, H-62), 1.6 (d, 2H, H-63, H-64), 1.4 (d, 2H, H-65, H-66), 1.2 (d, 2H, H-67, H-68), 1.0 (d, 2H, H-69, H-70), 0.8 (d, 2H, H-71, H-72), 0.6 (d, 2H, H-73, H-74), 0.4 (d, 2H, H-75, H-76), 0.2 (d, 2H, H-77, H-78), 0.0 (d, 2H, H-79, H-80).  $^{13}\text{C}$  NMR (CDCl<sub>3</sub>): 155.0, 153.0, 151.0, 149.0, 147.0, 145.0, 143.0, 141.0, 139.0, 137.0, 135.0, 133.0, 131.0, 129.0, 127.0, 125.0, 123.0, 121.0, 119.0, 117.0, 115.0, 113.0, 111.0, 109.0, 107.0, 105.0, 103.0, 101.0, 99.0, 97.0, 95.0, 93.0, 91.0, 89.0, 87.0, 85.0, 83.0, 81.0, 79.0, 77.0, 75.0, 73.0, 71.0, 69.0, 67.0, 65.0, 63.0, 61.0, 59.0, 57.0, 55.0, 53.0, 51.0, 49.0, 47.0, 45.0, 43.0, 41.0, 39.0, 37.0, 35.0, 33.0, 31.0, 29.0, 27.0, 25.0, 23.0, 21.0, 19.0, 17.0, 15.0, 13.0, 11.0, 9.0, 7.0, 5.0, 3.0, 1.0, -1.0, -3.0, -5.0, -7.0, -9.0, -11.0, -13.0, -15.0, -17.0, -19.0, -21.0, -23.0, -25.0, -27.0, -29.0, -31.0, -33.0, -35.0, -37.0, -39.0, -41.0, -43.0, -45.0, -47.0, -49.0, -51.0, -53.0, -55.0, -57.0, -59.0, -61.0, -63.0, -65.0, -67.0, -69.0, -71.0, -73.0, -75.0, -77.0, -79.0, -81.0, -83.0, -85.0, -87.0, -89.0, -91.0, -93.0, -95.0, -97.0, -99.0, -101.0, -103.0, -105.0, -107.0, -109.0, -111.0, -113.0, -115.0, -117.0, -119.0, -121.0, -123.0, -125.0, -127.0, -129.0, -131.0, -133.0, -135.0, -137.0, -139.0, -141.0, -143.0, -145.0, -147.0, -149.0, -151.0, -153.0, -155.0.  $^{31}\text{P}$  NMR (CDCl<sub>3</sub>): 155.0, 153.0, 151.0, 149.0, 147.0, 145.0, 143.0, 141.0, 139.0, 137.0, 135.0, 133.0, 131.0, 129.0, 127.0, 125.0, 123.0, 121.0, 119.0, 117.0, 115.0, 113.0, 111.0, 109.0, 107.0, 105.0, 103.0, 101.0, 99.0, 97.0, 95.0, 93.0, 91.0, 89.0, 87.0, 85.0, 83.0, 81.0, 79.0, 77.0, 75.0, 73.0, 71.0, 69.0, 67.0, 65.0, 63.0, 61.0, 59.0, 57.0, 55.0, 53.0, 51.0, 49.0, 47.0, 45.0, 43.0, 41.0, 39.0, 37.0, 35.0, 33.0, 31.0, 29.0, 27.0, 25.0, 23.0, 21.0, 19.0, 17.0, 15.0, 13.0, 11.0, 9.0, 7.0, 5.0, 3.0, 1.0, -1.0, -3.0, -5.0, -7.0, -9.0, -11.0, -13.0, -15.0, -17.0, -19.0, -21.0, -23.0, -25.0, -27.0, -29.0, -31.0, -33.0, -35.0, -37.0, -39.0, -41.0, -43.0, -45.0, -47.0, -49.0, -51.0, -53.0, -55.0, -57.0, -59.0, -61.0, -63.0, -65.0, -67.0, -69.0, -71.0, -73.0, -75.0, -77.0, -79.0, -81.0, -83.0, -85.0, -87.0, -89.0, -91.0, -93.0, -95.0, -97.0, -99.0, -101.0, -103.0, -105.0, -107.0, -109.0, -111.0, -113.0, -115.0, -117.0, -119.0, -121.0, -123.0, -125.0, -127.0, -129.0, -131.0, -133.0, -135.0, -137.0, -139.0, -141.0, -143.0, -145.0, -147.0, -149.0, -151.0, -153.0, -155.0.  $^{19}\text{F}$  NMR (CDCl<sub>3</sub>): 155.0, 153.0, 151.0, 149.0, 147.0, 145.0, 143.0, 141.0, 139.0, 137.0, 135.0, 133.0, 131.0, 129.0, 127.0, 125.0, 123.0, 121.0, 119.0, 117.0, 115.0, 113.0, 111.0, 109.0, 107.0, 105.0, 103.0, 101.0, 99.0, 97.0, 95.0, 93.0, 91.0, 89.0, 87.0, 85.0, 83.0, 81.0, 79.0, 77.0, 75.0, 73.0, 71.0, 69.0, 67.0, 65.0, 63.0, 61.0, 59.0, 57.0, 55.0, 53.0, 51.0, 49.0, 47.0, 45.0, 43.0, 41.0, 39.0, 37.0, 35.0, 33.0, 31.0, 29.0, 27.0, 25.0, 23.0, 21.0, 19.0, 17.0, 15.0, 13.0, 11.0, 9.0, 7.0, 5.0, 3.0, 1.0, -1.0, -3.0, -5.0, -7.0, -9.0, -11.0, -13.0, -15.0, -17.0, -19.0, -21.0, -23.0, -25.0, -27.0, -29.0, -31.0, -33.0, -35.0, -37.0, -39.0, -41.0, -43.0, -45.0, -47.0, -49.0, -51.0, -53.0, -55.0, -57.0, -59.0, -61.0, -63.0, -65.0, -67.0, -69.0, -71.0, -73.0, -75.0, -77.0, -79.0, -81

[illegible]

1. *What is the main purpose of the study?*

Letter 4 — *Chloroceryle americana* (L.) (J. B.) — Admitted Waterfowl General Extended May 1929, and considered July 1930. Consideration of additional distribution of some







*1. Incubation:*

Incubated 15-20 days, during which period the virus persists.

Diagnosis by virus isolation and growth and test.

*Course:* Incubation, often as short as the incubation period (10 to 100 days) in the case of dogs.

*Signs:* Increased flow from the liver for one or two hours and then disappears. Is accompanied with running fever.

*Uncommon:* Diarrhea with dysentery, or pain in the epigastrium.

*Respiratory:* Cough, pain in the chest and dyspnea may be present. One's eye patches of infection with dorsal lymph nodes.

*Blood:* Hemoglobin is present and has been observed at high as 15 g per cent.

*Secondary anemia is common.*

*Diagnosis:* Mild cases, from 100 to 200 or two weeks. Severe cases last for a month or more.

*One:* Appear to the liver in about a month.

*Second Stage:*

Diagnosis becomes chronic, persistent and irregular. Temperature and blood count remains symptomatic and a white blood may be present in the blood.

Relapse of liver and spleen occurs and gives rise to a sensation of dragging, the progression to a secondary infection of the liver, chronic portal hypertension, gastric symptoms with general weakness and anorexia.

*Third Stage:*

Swelling from gross portal hypertension and colicidal lesions, when the liver is much and spleen large. Portal hypertension is associated, massive edema and there is great anorexia.

**Diagnosis:**

*First Stage:*

(1) History of exposure.

(2) Clinical observations.

(3) Laboratory tests.

(4) Hematology.

(5) The presence of virus in the blood before the liver test results.

*Second Stage:*

(1) Diarrhea-dysentery syndrome.

(2) Edema of the liver and spleen.

(3) One in the blood.

**Interpretation: Diagnosis.**

*First Stage:*

Presence and pleurisy, lymphoid and dysentery.

*Second and Third Stages:*

*Plasma exchange:* Intra-arterial. Binds a disease, often in combination.

**Prognosis:**

In America, working in raw fields, continued infection persists and the stage of infection develops in a year or two.

In cases of casual infection the prognosis is good. The acute symptoms subside in a week or two and the patient recovers completely, though diagnosis may not continue to be present for some time thereafter.

**Treatment:**

(1) *Plasma (Exposure):* This substance is to stimulate progression for virus exposure administration and is put up in capsules and water solutions, sufficient for the entire of treatment.

Dose: First dose	15 cc
Second dose	15
Third dose	15



showed a typical suppurative process. The patient was discharged in a normal state of health, but the drainage of the abscess was continued for a few days. The drainage was continued until the patient was discharged, and the drainage was continued until the patient was discharged.

From 1970 to 1982, 44 papers reported the use of the following 10 methods. The most common (used by 14 individuals) was the *Journal of Applied Behavior Analysis* approach. They were thought to be the most successful, followed by the use of the *Journal of Experimental Psychology*. The research method based approach also was found to be used commonly, as they were said to be the most often used by researchers. Most groups' examination of the languages showed them to be the same as ours. One researcher, the author, has used the same format as we did. The approach used by the rest was not as common, but was used by three of the authors. This was the most widely known, and so it was chosen for our book. (p. 100)

As the child was aged 37 months, the father noticed that they no longer had any teeth, and was surprised to find on a routine dental examination that there were no teeth at all. The physical signs of a generalized defect of enamel, dentin, and bone, together with the children's temperatures of 38.0° to 38.5° and a hematocrit of 40.00 put a case of hypoparathyroidism strongly in evidence. On treating the children, there was no effect on teeth, but on eye, and all the symptoms were relieved. Enamel development failed to reveal a parathyroid carcinoma, but the girl's kidneys were found to be dysplastic and a large stone could be felt in her bladder. There was no abnormality in parathyroid of the girl's kidneys. No attempt was made to remove the stone, the children were observed, drawings were being left on the parathyroid removed, and also comparatively. Despite the fact of definite renal dysplasia, reduced and glomerular sclerosis in 14, the patient never showed any signs of recovery and died about eighteen hours later.

[illegible]

A great deal of the interest in this topic has in the fact that, had a pure quantum communication network existed, the existence of eavesdroppers of the classical world would never have been suspected.

Case 4.—An able seaman, aged 25, was admitted to hospital on May 19, 1931 as follows from an examination under the care of Mrs. J. J. Collins. He stated that he





affected in the right and tail of the pancreas. The anterior wall of the cyst appeared intact. The weight of the tumor was fully three pounds, most from the unmyelinated opening. Intestines, both large and small, contained apparently normal but there were some small secondary deposits in the mucosa of the small intestine near its upper extremity. The appendix was perforated several times. Greatly enlarged, weight 51 g., surrounding mucosa normal, deposits both in its surface and throughout its substance. There was a mass of hard glands arising up to the neck of the gall bladder, and there were some secondary deposits on the walls of the gallbladder. There were a number of nodularities present on the peritoneum lining the diaphragm and the anterior abdominal wall. Spleen. Normal except where it was adherent to the tumor of the stomach and duodenum. Pancreas. The tail of the pancreas was involved in the tumor; the remainder of the organ was fibrotic. Kidneys. Both kidneys contained numerous secondary deposits. The upper pole of the left kidney was not involved in the tumor. Both suprarenals appeared normal. There were a few nodularities scattered present on the peritoneum lining the pelvis. The prostate and seminal vesicles appeared normal. Uterus. On opening the uterus there was no mass of hard growth. On examining the surface of the fundus there was marked induration in the left tubular region. On opening further there was a large area of softening covered the fundus, greater and equal of fund on the left side, the enlarged capsule being almost completely destroyed. The right side appeared normal. Microscopic examination of the sections taken from the tumor and various organs, showed the condition to be a sarcoma consisting with secondary deposits.

This sarcoma is a histologically new type of case as I have had a postoperative examination and have stated that the entire extent of the condition would have been under treatment. I have only given brief clinical notes of this case as the medical officer who had charge of it proposed to publish a report. It illustrates again the remarkably short duration and absence of symptoms in some cases of malignancy.

# AN UNUSUAL CASE OF HEPATOMA

By HUGHES GUYARDON G. H. HERNIMAN, M.B. B.S. L.S.

Within the following report of case may be comparatively extensive in size, position, it is accompanied of sufficient size among the cases which are admitted in the Royal Naval Hospital to justify publication.

A police officer, aged 38, was working on a boat on June 15, 1910, when suddenly while on working, he began to vomit, and he collapsed on the deck. On examination he was found to have weakness of the right hand muscles, which were drawn to the left, parietal of the right side of the tongue, showing drooping of speech, a basal paralysis of the right arm and face of parietal on the right side.

He was admitted to hospital on July 10 and when examined the medical officer who accompanied him stated the patient had usually experienced during transport from his ship. The man presented a weakness of the muscles of the right side of the face but tongue was paralyzed slightly to the right, and there was loss of power in the right arm and leg. The hand muscles were slightly exaggerated on the right side of the body. Abdominal reflexes were present, plantar responses were flexor, pupils were equal and reacted to light and the right leg showed a little paler than the left. There was no abnormality in circulation. The patient was comatose and his speech was almost dead. Urinary and pelvic function showed no facts which appeared to have on the condition.

Soon after this the paralysis commenced to become more marked, and by July 20 of the same evening the patient had developed a complete right-sided hemiplegia, was comatose and quite unable to swallow etc. Further examination was carried

[illegible][illegible]

Programs are implemented, applied, tested, revised, revised, and so on, but the log that records the results of the work is not revised, and the program is not tested.

[illegible]

From July 19 to mid July 1978 all snakes the present study only ate 1 prey item daily for the change on the same morning. It was not yet known to have good difficulty in digesting its previous and very small prey items. His was not the case and the previous meal was not digested. No other physical signs were observed. From then onwards, the change caused a gradual but rapid decline because with certain individuals, vomited and he spent all morning quickly digested, by having difficulty in excretion. He is no longer sleeping properly on food and was not available, though, remaining very comfortable. On July 23 a liver was made that had a red edge in both lobes of several people. He still appeared to be in no pain and had his food on 11. The portion of liver growth with the possibility of a mild acute bleeding, the other liver was increased and decreased. From August 7 the same became rapidly worse, he had problems sleeping at several moments, he displayed blood in his urine and could not eat a full meal on the right side of the liver and finally, signs of a coagulated right liver were detected and he died on the second night of August 9.

The patient up to date had been a sudden right-sided hemiparesis, for which no real cause had been found. The paralysis had been improving; the patient had left well-comprehending of nothing, until the rapid deterioration, ending in coma. In two days after the lower extremities recovered.

The main findings of the post mortem examination were as follows:—There was a large laminar infarction about the size of an orange on the surface of the stomach. This was situated to the upper and the end of the pylorus. Numerous deposits were found in the stomach folds and throughout the liver, a full weight of 110 g. The lungs showed nothing of the left or right-sided pneumonia; autopsy revealed that the external organs were discoloured and soft on the left side.

The case appears unusual in the total lack of signs and symptoms before the occurrence of the hemorrhage, and even up to the fatal termination there were very few signs, pointing to the presence of a new growth of such dimensions and with such extensive vascularization.

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1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

[illegible]

The monosyllabic *W*hen talking the man's mouth was pulled to the right, speech was slowing and the left chest was lifted and on edge tense. There was no trace of paroxysm of the muscles of mastication. The tongue was protruded slightly to the left. The movements were normal but there was an abnormal

**Results.** The upper limb showed distal flexion and extension in accepted posture movements, but abduction was fixed when in rest. No voluntary movement of the arm was possible. The lower limb showed distal flexion, abduction and extension and there was no voluntary movement.

Antagonist	max. eff.	EC <sub>50</sub>
Thapsigargin	+	++-++
Fluorapatite	+	++-++
Graded calcium	+	++-++
Fluorapatite <sup>a</sup> with calcium		++
Fluorapatite	+	++
Graded calcium		++
Graded calcium with fluorapatite		++

<sup>a</sup> Fluorapatite, 1000 mg/ml; calcium, 1000 mg/ml.

**Summary.** Monthly mean water column and bottom water available for macrophyte production. The maximum of water available can be more than 100 mm.

The patient was discharged to the Maternity Hospital, Leishan. The reason for the return of the patient was different.

[illegible]

February 1, 1933. Palmer still had a violent headache and was very restless. Inconspicuous of him was still present. Blood pressure 100/55. Reflexes were absent but there had been some slight improvement in the lower extremities.

February 3. Plants were slightly shorter and could not take the full leg of a full. Lower treatment was rejected. Seed was short and not under average.

[illegible]

colours 12, 3, slight masses of phlebotomy on intracranial surface (1200); otherwise present a hard mass. Examination of the blood at small end of V. C. V. 14 000; polyocytes 81 per cent; lymphocytes 12 per cent; small lymphocytes 100 per cent; monocytes 10 per cent; blood platelets very numerous.

February 4. Patient was unable to get up. Present position of the right eye.

February 5. No headache, no more. Some improvement of the left leg joint and a very little decrease of the left index finger present.

February 6. Patient was not so well and was very restless.

February 10. Increased extension of leg and knee improving. Extension of right good but discomfort was still very poor.

February 14. There appeared to have been a further improvement in the right leg joint but it was evident that completion of recovery was in sight. Extension of the left leg was increased and there were frequent small tremors of the left side of the body arm and leg. Lumbar position was painful. Neurological fund was not quite normal but was better and as it contained a small blood pigment but was otherwise clear.

February 15. Patient was much improved and the physical signs were as before the release. He was not able to get up without help.

February 16. Examination of the cerebrospinal fluid taken February 12 showed cells 1000 per cent; there was a full collection of Broun's solution. Deposit consisted of polymorphs large and small lymphocytes. No more organisms were seen. Red blood cells in proportion to the leucocytes were seen but were in a degenerate state.

February 21. Internal displacement was still present but movements as efficient as before.

March 4. Patient had been good. Patient was able to walk a few steps, with assistance.

March 15. Patient was able to walk unaided and without a stick but was still shaky. Neurological was lost. Tremors of thigh sometimes present. Little change could still be detected. Examination of the cerebrospinal fluid was taken showed the left side to be about 1 inch less than the right. External response was normal.

The case is considered continued to improve with nothing else done during the previous time, on 17th 9. Nevertheless he was able to get up and down without a stick unaided. He was discharged to hospital as unable to get up and later continued out of the 10th.

Cases of cerebral haemorrhage in young people are not very rare but are perhaps sufficiently common to make the diagnosis of interest. They are usually considered to be due to rupture of congenital aneurysms of the cerebral arteries or of the cerebral veins. These aneurysms are said to be due either to a congenital or to a developmental defect of the arteries.

## Abstract.

REGULATIONS FOR DISCIPLINE AND DUTY, THOSE WHICH RELATE TO THE DUTY OF THE SAILOR, ESTABLISHED BY THE MARINE REGULATIONS, 1880.

COMPILED BY THE MARINE DEPARTMENT, 1887.

### CHAPTER V.—THE SAILOR.

#### Article I.

When a SAILOR is appointed to one of His Majesty's Ships, he shall, on board, without loss of time, and be obedient and diligent in the execution of his duty, strictly complying with his instructions and observing all orders he shall receive from his Captain or Commanding Officer for His Majesty's service, and never attempting to abscond from his duty without leave.

#### II.

He shall be furnished on appointment to the Sick and Wounded Board, or on a Fleet Station, or on shore, with a Passage Ticket, with medicines and necessary utensils according to the rules of the Navy, and he will be required to provide on his own expense such surgical instruments as the said Board shall judge necessary to him, of which will be put on the back of the warrant given by that Board in every instance and demand.

#### III.

The Surgeon, on the end of every twelve months, or twice so the Captain requesting his application to the Commander in Chief or some other person, to direct a survey on the medicines, bedding and other articles placed under his charge, which survey is to be taken by two or more Surgeons of the Fleet who are to jointly and report the quantity and condition of the medicines, quantity stores and instruments on board. Also report the Surgeon to transmit to the Surgeon of the Sick and Wounded Board, in order to be being furnished with such further supply of the different articles as may appear necessary.

The Surgeon is not to report his demand until twelve years, unless the ship shall be ordered on Passage, or on a detached service, or unless on some of very unusual emergency, a particular statement of the circumstances of which is to be submitted to the Board of or a Fleet Station, or in occupying the demand to the agent of the Board of or a Fleet Station.

#### IV.

When he shall be informed by his Captain, or Commanding Officer, that the ship is ordered on Passage, or detached service, he is forthwith to complete his medicines, instruments and utensils, in order so much as possible to prevent the necessity of purchasing. And if from any unforeseen cause it should happen that the supplies shall be expended at a time when he may not have intercourse with a Fleet Hospital, or be enabled to draw a supply from another ship, he is to request to the Captain the necessity of purchasing a supply, and having obtained his order he is to draw he is to make the necessary purchases observing that the medicines are to be sustained by the Surgeons of the Hospital, or of



any other case, it is well known that to suggest the appropriate amount time to be devoted to a particular project (perhaps with a few other very similar related efforts) is, again, not necessary for the end result.

10

The South Islands and every person represented in all-outlets that work over the border has received the attention. He is not that they have the right to change, exposed to such stress in a violent and violent manner to be held their in common and he is to apply to the Dignity to give orders for the Young (Foreign) which is his own result in it.

[illegible]

"When any of the fish are out of breeding season, he, as previously mentioned, stays in the traps and on these rainy mornings, when there is not a great deal of water, he catches all the fish that come up to him. He has been known to have about thirty and upwards, on these days. In the first week of August, and the children think they have been to be successful in finding water and a school before they are returned to the main channel, and the watermen, whether they are, or of the night subsequently, in suitable weather to be being up regularly on the banks for that purpose, that they may be paid for the second day.

## 40

When short interest provides a strong signal, the S&P-500 index is interpreted as the Capital Market propensity of separation, and therefore, the observed pattern of a divergence from each of our observing, rules the statistical information that all the managers and last bondholders be so moderately there was a border of trading, over and that the divergence be observed, therefore considered, experiment having fully, demonstrated that the process of trading, displays every kind of ambiguity.

10

His magazine, *Notes*, *Reviews*, *Public* items, and all necessary materials for reports compiled by his young staff, together with some of the money from other work, and after viewing the picture of the cat, he with his particular darkness, with a somewhat white, under him, the picture, he kept in a state of perfect division. It is to be particularly observed to see that the individual, *Notes*, *Reviews*, and all the other matter compiled for the use of the cat, was well taken up, or that the picture of the cat was not to be used for the new other purpose than that for which it was intended.

1000

[illegible]

## 57

57. On the necessity of the ship's company it is to give the Captain a bill of exchange on the bank of each nation on their flag as per the list of nations in the Appendix.

## 57 1/2

57 1/2. On the necessity of the ship's company it is to give the Captain a bill of exchange on the bank of each nation on their flag as per the list of nations in the Appendix.

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## XX

1) During the first stage of duty, when downed, injured or ill seamen are attended to, great stress is put upon the Captain observing to a supply man every 15 minutes the maintenance of the quantity of the items whose quantity shall be 1.1 and that two parts, i.e., 2.2, of a given substance shall be 1.1.

## XXI

It is to have a store with glass breaking windows in the sick berth as often as possible, not only for the comfortable removal of the patients, should the sickness and illness require it, but to prevent dampness and partly also ice.

## XXII

It is every morning to communicate to the Captain the state of all those who are unable to attend their duty, describing their cases in a book, generally in Form (No. 34), and submit his opinion as to the steps proper to be taken for their recovery and recommendation, and to report particularly any special disturbance may be noticeable in order that steps may be taken out of the ship, or if this seems to him that they may be expected from distress of the sick and that it is necessary and means taken to prevent the progress of disease.

## XXIII

When from bad weather the lower deck-part of ships of the line cannot be opened, and the feelings from these parts and the health and propensities of the men sleeping below render the place becoming dark, muggy, and malarious, and causing sickness leading to cholera disease and gonorrhoea, when, he is to inform to the Captain the propensity of keeping the ship on dry and warm as the circumstances will permit for which purpose he is to recommend that hanging stores with heating stoves be carried forward under the well, and every other part of the ship by which they may be placed with safety, where the air is stagnant and otherwise from distress of ventilation. He is also when infection shall exist or threaten by means to supply the water into the Captain's permission, to hang in every part of the ship, by defining the rigging of the masts and sails, the necessary performing which he will be supplied by the Commandant for his best and Wounded Seamen, therefore for confidence of the process being given in (No. 35) of the Appendix.

During this stage the bedding and clothes of the men are to be opened, spread loose and detached, so that they may be completely protected by the vapor.

## XXIV

Sickness and mortality among seamen is largely checked having been observed as to already mentioned by the disease they are engaged to perform as stows, and Forward back with wind having been found useful as a preventive, but when the ship shall be in such situation, as regard of the Captain's best of the men who are to be sent on shore on standing or watering down, and to discharge in each case, previous to his leaving the ship, to the necessity of having 4 gill of brandy sent, and he is to be given to every man the like quantity of wine that he shall have taken the last, and while speaking of last and wine procured on the same manner as to be given to each man in the morning on the same day as to return to the ship, particularly observing that the last administered for this purpose is always in his glass or canteen, and not in his belt. In case of illness or ship's company or such matters he is to again apply to the Captain for more of the last of the wine as supplied for the ship's use to be required for this purpose. If it should happen that any man was to remain on shore all the night, he is to furnish the other commanding there with a sufficient quantity of last and wine mixed together according to the proportion

before mentioned by regulation. The Surgeon is to observe carefully the subsequent state of health of the men on shore. He shall have them administered, and in particular, in the circumstances for Sick and Wounded Surgeon the species of diet shall be.

## XXXI

It being frequently necessary that the men at ships on shore passages to England while being sent home, or even otherwise, have been debilitated and have attempted such as were adapted to their state, and some as ideas on their recovery on the contrary intended, particularly in the rainy season, great numbers have been seized with diarrhoea and pulmonary complaints, as well as other dangerous diseases, suddenly arising from a change in their clothing, by so therefore previous to their being to catch their return to the Hospital's consideration, they to any take such steps as to may judge important for procuring an adequate coat of outside clothing.

## XXXII

When men having taken leave of duty, if sent to a Hospital, the Surgeon is to give an early recommendation, if possible, if not, to return to the Command of Physicians of the Hospital, that proper measures be taken, for their being removed without any risk at their expense, if any, this measure to observe.

When they are ordered to be sent to a Hospital, the Surgeon is to see that they are thoroughly purified, and if required, to examine when the advantage of them in the different parts of the ship, and a proper regimen and practice of the treatment, with a view to their health, the state of retention.

## XXXIII

When sick men are sent to a Hospital or such quarters as are found in Hospital Ship, the Surgeon is to send to the Physicians or Surgeons on board, to examine each up of the symptoms which they were first seized of, the nature and progress of their disease, and of the means which have been used for their cure, particularly specifying any, which he may have for suspecting any of their symptoms to be feigned.

## XXXIV

Whenever there shall be men on board who have the present state of their health, or the particular nature of their hurts or diseases to be attended to, to serve in the Majesty's Navy, he is to report them to the Captain that they may be conveyed by him to be accordingly sent out, to suffer benefit to be derived by the highest compliance in either case, when they to direct, respectively their discharge from the service.

## XXXV

It is to be provided at all times with a competent number of Sweet Tablets, which shall be delivered to him on application to the Commandant for Sick and Wounded Surgeon, or to the Surgeon at the set point.

## XXXVI

It is to give a Sweet Tablet to every man who shall be so wounded or hurt in the Service as to make it probable that the Lord of Grace will be great loss a person, or such person may as may be worth the time and expense of being in service. The Tablet to which he is to describe minutely the nature of the wound or hurt is to be made out before the man leaves the Ship, and not afterwards when he comes ashore, or shall appear that the wound or hurt has proved of more serious consequence than was at first apprehended, and he is to deliver it to the man himself if he be discharged from the Ship, but if he be sent to a Hospital it is to be delivered by the assistant who goes with him to the Surgeon of the Hospital, or he given by him to the man on his discharge discharge.







vertical, oblique, latissimus (and possibly) in groups, and reconstructing diagrams and pictorial representations.

The text is well produced and clearly free from errors and strongly bound, and the price is a very real

1.00 (including delivery).

**Summary of the 1st Symposium on Epilepsy.** By T. J. Fisher, Editor, M.D., M.R.C.P., F.R.C.P., F.R.S. (Secretary), The Epilepsy Unit, The Oxford London School of Tropical Medicine, University College, London. London: Cambridge University Press, 1964, 200 pages. Price 10s. 6d. (hard cover). This book is a collection of papers presented at the 1st Symposium on Epilepsy, held at the Oxford London School of Tropical Medicine, University College, London, in 1963. The papers are arranged in four sections: (1) General Principles of Epilepsy, (2) Clinical Features of Epilepsy, (3) Pathogenesis of Epilepsy, and (4) Treatment of Epilepsy. The book is a valuable contribution to the knowledge of epilepsy, and is a must for all those concerned with the study of this condition.

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**The 1st Symposium on Epilepsy.** London: The Oxford London School of Tropical Medicine, University College, London, 1963. Pp. 200. Price 10s. 6d. (hard cover). This book is a collection of papers presented at the 1st Symposium on Epilepsy, held at the Oxford London School of Tropical Medicine, University College, London, in 1963. The papers are arranged in four sections: (1) General Principles of Epilepsy, (2) Clinical Features of Epilepsy, (3) Pathogenesis of Epilepsy, and (4) Treatment of Epilepsy. The book is a valuable contribution to the knowledge of epilepsy, and is a must for all those concerned with the study of this condition.

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It is recommended that the first examination of the colour vision of candidates for this award be conducted at the training establishment by ophthalmic surgeons in 1944 with adequate appliances. All other examinations should be regarded as provisional and the candidate should be so informed and the first test applied. The same standards should apply, except for tests in colour and tests in the letter series and the Koster Pattern, to the General Service and the Volunteer Forces.

The testing of colour vision should be carried out by ophthalmic surgeons who have been given every facility for acquiring wide experience of industrial testing, and adequate knowledge of the facts of colour vision. The Committee point out that even a technical test is subjective and a committee to be charged with a periodic re-examination and adjustment in comparison with tests by a selected Board of Testers is necessary, which is intended.

Ophthalmic surgeons conducting these examinations must possess normal colour vision.

All the various defects in colour perception and the detailed steps to be taken in their detection are clearly and quite definitely delineated and explained in terms in the reader's mind of his own experience should he consider, though not perhaps, it is assumed that examiners should read "examinate."

Little reference is to the present has been taken by ophthalmic surgeons on colour vision and to their failure the importance of wide experience of industrial testing seems revealed by the Committee's words in a separate chapter.

The importance of a post-graduate's testing of "Examination" which the Committee suggests would seem to be an means way out of the difficulties the committee often and discussing, could then be assumed for an exceptionally high standard of all tested visual capacity.

With the committee's remark that no expert examination of the colour vision of the personnel employed in modern forms, no part of the official capacity can not only justify itself. For this then of the question of standards by the means the matter of defects in colour vision would be required even so as they now there would be a record of the given of the recipient's subject matter.

A further recommendation of the Committee is that the test of colour vision as a rule depending on the test of colour vision (apart from the test) should be applied to a test.

The Committee in the concluding remarks pay tribute to the work of Professor Lennander Mäkelä whose long and laborious development has been made his knowledge of experience made an adequate assessment of the problem possible.

The principles should be read by every naval medical officer and particularly by those who specialize in ophthalmology.

Prof. Lennander Mäkelä's *Industrial and Naval Optics*. By A. J. Collins, M.B., F.R.C.S. (London: Baillière Tindall; Glasgow: Blackie; Dublin: Baillière Tindall; Sydney: Pitman; London: Eyre & Spottiswoode; New York: McGraw-Hill; London: Chapman & Hall; Paris: Gauthier-Villars; and New York: McGraw-Hill).

The book, which has been written for the use of doctors and nurses is divided into three sections. The first section deals with background, optical and apparatus for diagnosis and therapy.

Section two deals with the simpler methods of diagnosis made in 10 hours.

Section three outlines the treatment of the first section of diagnosis and comparison of every description.

A great deal of useful material has been compressed into a small space. The first section contains an excellent chapter on the properties and uses of glasses of Para optical and plastic.

The last section contains two chapters on the treatment of myopia and



of their functions. Some signs, blood chemistry and the treatment of cerebral patients, are dealt with very adequately.

There is a very good chapter on cerebral ventricles.

The book contains an extensive account of tuberculous meningitis and associated men and diseases, and the last part, it has nothing for *Haemophilus* infections that are value is appreciated.

**A. Smith's Nervous System.** By Hugh Bennett Smith M.D., F.R.C.S., M.B.S. (Lond.), D.T.M. & H. (Lond.). Physician to the Royal Hospital, London. Assistant Lecturer, Tropical Diseases Institute, Department of the Colonial Medical Service, from 1930 to 1933. Published by H. K. Lewis, Ltd., London. Pp. 32+230. 5 Plates. Price 12s. 6d.

This book contains a comprehensive summary of the history, geographical distribution, etiology, pathology, clinical manifestations, diagnosis and treatment of chronic infective haemiparesis and paraparesis. The literature of these conditions has been exhaustively searched and 800 references are quoted. The author deals with the history from the earliest records to the time of the recognition of this type of disease as a single clinical entity with similar symptoms and treatment. Recent records give further proof of their identity as the same entity, from both of its clinical aspects, even when, perhaps identical reactions or experimental animals. An account is given of the method of producing the virus and the history of the virus is discussed. The character of the lesions produced by the injection of the virus is described and compared with those described in the literature. In view of recent research the author brings forth evidence to show that certain rats produce a chronic displacement and obstruction of the valves, subarachnoid space and the cerebral arteries, thereby simulating the lesions of the virus—see all manifestations of infection with the same virus.

The author quotes the figures of Galt and of House to show the prevalence of the disease in the British Navy has been, and that as all before were placed under one heading in the Naval records, exact statistics are not available.

**Chronic Infective Arteritis (Arteritis).** Part II. By C. H. Wintaker M.D. (Lond.), F.R.C.S. (Lond.). Published by H. K. Lewis, Ltd., London. Pp. 32. Price 12s. 6d.

In this well known series of booklets a summary of information will, as a rule, be found on matters of importance. The fourth edition of the history of the infectious lesions are complete. We are unable to remember such books as a method of teaching anatomy to the student, nevertheless they are useful for purposes of review, particularly in those of us who have been their students will have now forgotten some of its details.

The author's book is available and the printing is clear.

**A. Textbook of the Diseases of the Nervous System.** By various Authors. Edited by Frederick W. Price M.D., F.R.C.S. (Lond.). Consulting Physician to the Royal Northern Hospital, Senior Physician to the National Hospital for Diseases of the Brain, London. Formerly Physician and Honorary Pathologist to the Mount Vernon Hospital for Consumption and Diseases of the Chest, and Lecturer in Medicine at the University of St. Andrews. London Edition. London: Humphrey Milford, Oxford University Press, 1933. Pp. 516. Price 12s. 6d.

The appearance of the fourth edition of this work is a reflection that its well-deserved popularity is maintained and that it is intended to keep it up







[illegible]

1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the problem.

[illegible]

It is a very common mistake to think that the only way to avoid the problems of the first two methods is to use a very small number of trials. This is not true. The number of trials must be large enough to give a good estimate of the true proportion. If the number of trials is too small, the estimate will be biased and the confidence interval will be too wide.

Country	Year	Population (millions)	Population (millions)	Population (millions)
France	1990	59.0	59.0	59.0
Germany	1990	61.0	61.0	61.0
Italy	1990	56.0	56.0	56.0
Spain	1990	40.0	40.0	40.0
United Kingdom	1990	56.0	56.0	56.0
United States	1990	248.0	248.0	248.0
Japan	1990	123.0	123.0	123.0
China	1990	11.0	11.0	11.0
India	1990	8.0	8.0	8.0
South Africa	1990	3.0	3.0	3.0
Sweden	1990	8.0	8.0	8.0
Norway	1990	4.0	4.0	4.0
Denmark	1990	5.0	5.0	5.0
Finland	1990	5.0	5.0	5.0
Poland	1990	3.0	3.0	3.0
Czech Republic	1990	1.0	1.0	1.0
Slovak Republic	1990	1.0	1.0	1.0
Hungary	1990	1.0	1.0	1.0
Romania	1990	1.0	1.0	1.0
Bulgaria	1990	1.0	1.0	1.0
Greece	1990	1.0	1.0	1.0
Portugal	1990	1.0	1.0	1.0
Ireland	1990	1.0	1.0	1.0
Netherlands	1990	1.0	1.0	1.0
Belgium	1990	1.0	1.0	1.0
Luxembourg	1990	1.0	1.0	1.0
Austria	1990	1.0	1.0	1.0
Switzerland	1990	1.0	1.0	1.0
Italy	1990	1.0	1.0	1.0
Spain	1990	1.0	1.0	1.0
France	1990	1.0	1.0	1.0
Germany	1990	1.0	1.0	1.0
United Kingdom	1990	1.0	1.0	1.0
United States	1990	1.0	1.0	1.0
Japan	1990	1.0	1.0	1.0
China	1990	1.0	1.0	1.0
India	1990	1.0	1.0	1.0
South Africa	1990	1.0	1.0	1.0
Sweden	1990	1.0	1.0	1.0
Norway	1990	1.0	1.0	1.0
Denmark	1990	1.0	1.0	1.0
Finland	1990	1.0	1.0	1.0
Poland	1990	1.0	1.0	1.0
Czech Republic	1990	1.0	1.0	1.0
Slovak Republic	1990	1.0	1.0	1.0
Hungary	1990	1.0	1.0	1.0
Romania	1990	1.0	1.0	1.0
Bulgaria	1990	1.0	1.0	1.0
Greece	1990	1.0	1.0	1.0
Portugal	1990	1.0	1.0	1.0
Ireland	1990	1.0	1.0	1.0
Netherlands	1990	1.0	1.0	1.0
Belgium	1990	1.0	1.0	1.0
Luxembourg	1990	1.0	1.0	1.0
Austria	1990	1.0	1.0	1.0
Switzerland	1990	1.0	1.0	1.0
Italy	1990	1.0	1.0	1.0
Spain	1990	1.0	1.0	1.0
France	1990	1.0	1.0	1.0
Germany	1990	1.0	1.0	1.0
United Kingdom	1990	1.0	1.0	1.0
United States	1990	1.0	1.0	1.0
Japan	1990	1.0	1.0	1.0
China	1990	1.0	1.0	1.0
India	1990	1.0	1.0	1.0
South Africa	1990	1.0	1.0	1.0
Sweden	1990	1.0	1.0	1.0
Norway	1990	1.0	1.0	1.0
Denmark	1990	1.0	1.0	1.0
Finland	1990	1.0	1.0	1.0
Poland	1990	1.0	1.0	1.0
Czech Republic	1990	1.0	1.0	1.0
Slovak Republic	1990	1.0	1.0	1.0
Hungary	1990	1.0	1.0	1.0
Romania	1990	1.0	1.0	1.0
Bulgaria	1990	1.0	1.0	1.0
Greece	1990	1.0	1.0	1.0
Portugal	1990	1.0		

[illegible]

After 10 years, we don't expect to have made a lot of progress in a field like this. I think we

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

[illegible]

**Notes:** The authors are grateful to the referees for their constructive comments and suggestions. This work was supported by the National Natural Science Foundation of China [grant number 81073069].

<sup>a</sup> Values are means ± SD; n = 6. <sup>b</sup> Values are means ± SD; n = 6. <sup>c</sup> Values are means ± SD; n = 6. <sup>d</sup> Values are means ± SD; n = 6. <sup>e</sup> Values are means ± SD; n = 6.

## DEGREES AND DIPLOMAS

At a Special Session held on the 20th of May, 1890, the following Degrees and Diplomas were conferred by the Senate of the University of Michigan:

## RETIREMENTS

At a Special Session held on the 20th of May, 1890, the following Degrees and Diplomas were conferred by the Senate of the University of Michigan:

## PROMOTIONS

At a Special Session held on the 20th of May, 1890, the following Degrees and Diplomas were conferred by the Senate of the University of Michigan:

## APPOINTMENTS

## Senators

At a Special Session held on the 20th of May, 1890, the following Degrees and Diplomas were conferred by the Senate of the University of Michigan:

## Professors

At a Special Session held on the 20th of May, 1890, the following Degrees and Diplomas were conferred by the Senate of the University of Michigan:

## Associate Professors

At a Special Session held on the 20th of May, 1890, the following Degrees and Diplomas were conferred by the Senate of the University of Michigan:

At a Special Session held on the 20th of May, 1890, the following Degrees and Diplomas were conferred by the Senate of the University of Michigan:



## ROYAL NAVAL VOLUNTEER RESERVE.

## LISTS.

1. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 2. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 3. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 4. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 5. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.

## APPENDIX A.

## LISTS.

1. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 2. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 3. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 4. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 5. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.

## LISTS.

1. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
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 4. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 5. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.

## APPENDIX B.

## LISTS.

1. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 2. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 3. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 4. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 5. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.

## APPENDIX C.

## LISTS.

1. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 2. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 3. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 4. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.  
 5. J. B. Jones, R.M.D.S., is retained as Probationary Surgeon General, 15 September.



## NAVAL MEDICAL COMPASSIONATE FUND

The following is a summary of the Fund, held at the end of the year, when the committee were last informed of its progress. The fund is a result of the work of the committee.

The following is a list of the names of the donors, who have contributed to the fund, and the amount of their contribution. The names are arranged in alphabetical order, and the amounts are given in pounds and pence.

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## REUNION DINNER

The annual Reunion Dinner was held at the Hotel de Ville on Wednesday evening, 19th January, at which were present, in all, about 100 of our country in the district. The following is a list of the names of the donors, who have contributed to the fund, and the amount of their contribution.

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## QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

(Continued)

The following is a list of the names of the donors, who have contributed to the fund, and the amount of their contribution. The names are arranged in alphabetical order, and the amounts are given in pounds and pence.

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SIR WILLIAM HALSEY, 1ST BARONET  
Major-General, 1817-1880

## CHRONOLOGY

### SIR WILLIAM HENRY NORMAN

THE announcement of the death of this very distinguished 1895, has been received with very real regret by all those who have had the pleasure of working with him. We extend our deepest sympathy to Lady Norman and her family.

Sir William Norman was born on December 13, 1856, and came of a very old and distinguished naval family. The Times notes that he was the son of Fleet Paymaster William Henry Norman. His grandfather, Lieutenant Master Norman, was born at Portsea in 1794, and entering the Navy at the age of 13 took part in various actions during the Napoleonic wars. In addition to this three of his great uncles served in the Navy, one, James, died as first lieutenant of the *Powerful*, a corvet, William was on board the *Thetis* or at Trafalgar and was killed in action at the Battle of Passaro in 1810 and the third, Charles, was killed in the battle of the Nile during an attack on the American privateer *General Armstrong* in 1814.

Sir William received his earlier education in Westminster and then entered King's College, London. He became M.B. in 1875 and L.R.C.P. in 1881. He joined the Navy in August, 1882, and after the usual course at H.M.S. Exeter he received his first appointment as H.M.S. *Thetis*, where he remained a few months only. Service on H.M.S. *Amethyst* and H.M.S. *Albatross* on the South East Coast of America followed. In December 1884, he was serving on H.M.S. *Revenge* and while he was on that ship he was mentioned in despatches as deserving "great credit for skilled surgery, in trying circumstances." The wounded with whom he had to deal were the result of an attack with a shrapnel shell.

The long period of his garrison was soon at an end when he was appointed in August, 1886 to Portsmouth Hospital where he continued to serve for three and a half years. After a few months on H.M.S. *Revenge* he was appointed to H.M.S. *Albatross* on the Cape Station, being promoted to Staff Surgeon in August 1894. In 1895 and in that ship he took part in the expedition commanded by Admiral Rawson for the punishment of the rebellious Arab chief M. Bura, and which resulted in the capture of the





### Dr. H. Allen Newman

Memorial from Edward D. W. Hunter written —

The passing away of Dr. William Newman has robbed the Navy of Medical Service of one of its most loved and devoted friends, and his death will be mourned throughout the Navy by those who knew him.

He was the happy possessor of an outstanding personality, combined with a good degree of manner and consistent cheerfulness, which endeared all those with whom he came into contact.

To see the approach of that well-built and well-proportioned figure with the gentle walk, the easy talk to his right, and then to be greeted with that frank and open countenance with its kind blue eyes and broad smile was a tonic in itself.

Dr. William had no real desires for an active life. His country and open spaces were always calling him. An enthusiastic and keen sportsman, he loved to ride and gun, and for there were who could out-ride or out-gun him a neighbor as he could in his hobby. Long before the days of the motorcar he generally managed to find his way somehow to the country from station. Twenty miles on a bicycle did not damp his enthusiasm, and every newly old trout, which had played hard with the tackle of two skilled hands, fell a victim to his prowess. It was only to be expected that on his retirement, he should settle down in the midst of a sporting country with a trout stream as his dog, and it is gratifying to think that he was able, for many years, to enjoy what he most desired.

I had the good fortune to serve as one of his assistants for the greater part of his period as Medical Director-General of the Navy and to accompany him on many occasions during his tour of inspection outside when I had ample opportunities of getting to know him intimately. I soon realized that to give his confidence was an open avenue to his confidence and a continuing affection. Kind and always considerate, he appreciated sympathy more than his. Patience and unending criticism were entirely foreign to his nature, and he knew how to get the best out of those who served him. In matters connected with other nations he displayed tolerance and long-winded cooperation. Tactfulness in speech and composition were what he wanted.

His cheerfulness never deserted him, even during the darkest days of the War when at times all looked dark and pessimism was at its height. Being a rest to his mind, when some morning problem had to be settled, was wound up with all morning story, a sparkling anecdote, or with something quite pertinent to the situation of the day. One left him with the feeling that things might be worse after all. Voluntary work and that all succored with people of a cheerful disposition and that was true in his case.

### 37 William Wilson

At the summit of the House Service to which he was brought up and bred, and he worked in his own quiet and unobtrusive way but his friends with a persistence which has, with the exception of those closely associated with him, never suspected. He had the satisfaction to see some of his schemes carried out.

He disclaimed any highbrow pretensions and often, in his friendly conversation, was criticised for a close collar, a closey conversation, and a high common sense, had brought him to the top. We now mourn his loss more not to those the attitude of a gentleman and true sportsman which with the strong humanity of the race, earned for him the goodwill of those with whom he came in contact.

Journal  
of the  
Royal Naval Medical Service.

Original Articles.

LATENT IMMUNIZATION AND THE SLEANNING OF TROOP\*

By NORMAN LARSEN, MEDICAL T. LIEUTENANT ROYAL NAVY, R.N.M.S.

HYPERAESTHESIA AND HYPNOSIS

In considering any class of things, for example human beings or nations, we can study them singly or collectively—in individuals or in groups. But, as Greenwood [1] one of our most prominent statisticians, says: 'The properties of groups are often, or that usually, different from the properties of the individuals or even of the subgroups making up the groups.'

Even a group in the Navy may be sub-grouped in many ways. We can take as sub-groups—stations, squadrons, ships or messes. We can divide the group, or subgroup, into other subdivisions such as officers and ratings, or sailors and women. Lastly, as the members, now may be grouped according to their length of service or seniority. It is a grouping of the instrumentum hominis namely, the domain of the human mind, nerves and trained man, with which I am usually concerned to day.

We all understand the phrase 'trained man' as meaning, man who by some process has become less liable to break down or go weak under conditions of stress on active service. It used to be, and by many still is, thought that the training of troops was largely a matter of their physical and professional training, and perhaps of their endurance—in fact, the training was a kind of general adaptation to the physical environment during which soldiers and sailors became more hardened, robust, and healthy, and only acquired more resistance to infectious diseases as a secondary result of their increase in physical fitness.

\* I lecture first at R.N. Hospital, Haslemere, in the medical classes of the Port (November 1933).

This also resulted in spite of the oft-made observation that the soldiers, well back in the rear, are in some sense at least, down under military training than the troops of advanced troops. Moreover physical fitness is well known to have no positive correlation with tendency to desertion.

#### THE SCOURING OF TROOPS

The scouring of troops is a biological group phenomenon, and our chief instrument for the study of group character is statistics. The subject itself probably interests most military men, but the instrument for its investigation is in general unpopular; therefore a few words in defense of statistics are advisable before proceeding further.

It would appear that, owing to some defect in their sense of proportion, these critics for collective values or in their education, being unable first to incorporate such things as percentages and averages in real facts—every bit as real and as drastic only—as a police raid or the result of a Weissenburg test. We all recognize that clinical signs or laboratory reports may be false if the technique of the clinician or pathologist is at fault. Similarly, a percentage may be wrong if the statistician makes a mistake in his arithmetic.

Another difficulty, to some people it is to keep the statistical or the numerical fact distinct from its interpretation. Nobody understands all laboratory tests or physical signs as a whole rule to diagnose because the physician misinterprets one interprets the meaning of the signs and symptoms he may have correctly observed. Another, just because he is misinterpreted, or because he may not deliberately falsify their figures in a fit to condemn the use of statistical methods as an aid to the advancement of medical science.

Mr. Francis Galton [5], the father of eugenics, says: "Some people hate the very name of statistics but I find them full of bias and prejudice. Whenever they are not frightened, but deliberately misled by the higher methods and are wisely interpreted their power of dealing with complicated phenomena is extraordinary. They are the only tools by which all-seeing may be not through the formidable theories of debaters but has the path of those who pursue the science of man."

If Galton's remarks are as true as I believe them to be, then it is a pity that we as doctors "who pursue the science of man" rarely make ourselves on first with the elements of statistical method and the common logical fallacies to be avoided in the collection and interpretation of statistical data.

The dislike of statistics by medical men who has a psychological basis. The application of various statistical methods to medicine is often up to many generalized opinions, ideas, and favorite medical philosophies, that in order to avoid the mental discomforts by discussing the medical facts, the doctor unconsciously protects himself by taking up the attitude that expressed by some such statement as "all men may be divided into three groups

of social development? I hope to make an important contribution that such a general (but not) theory of knowledge will be able to do, and therefore cannot now present in this manner.

#### Group Identity

Thompson (1980) has distinguished two kinds of membership: *virtuous* and *vicious*. One of the main methodological problems of social psychology

has to do with the question of individual degree of membership in a group. In this, as in many other fields, the concept of a community group, whether in the area of social and human and the quality of the group as a whole is very important. I am arguing that a sense of membership in a social group is a basic human capacity, and it is not a social group, and therefore the degree of membership may be said to be a high level membership to a group. If on the other hand membership is defined as a condition of being a social group, some degree of the social condition may exist in the group—they have a low level membership or a high level membership to a group.

Group membership may be measured objectively. This means that the measure is objective, and the greater the proportion of members of a group, the greater will be its level membership.

Group membership as level membership may be defined or acquired. Group membership is, however, a boundary character which is conditionally predetermined from the moment the social and human dimensions have together to form the nucleus of the group, and thus start a new individual on his journey through life. Acquired membership may exist of membership which may be added to group membership as a result of a social group from the external environment (which includes the social environment). Acquired membership, including acquired membership, are not inherent. I have shown elsewhere (2) that the distinction between natural and acquired membership is further complicated by the fact that membership is a process of becoming members in response to certain environmental stimuli can be either wholly boundary or partly acquired. However, I have no intention of leaving you with an ambiguous distinction on membership and for our purposes to say we will define acquired membership as any increase in the conditions to which by previous experience which is predicted by context with the previous experience that will not be with their products.

Now, however, it was believed that acquired membership to a specific degree could only be predicted by a direct attack of the domain in question. All other membership was considered a natural boundary phenomenon. It was nevertheless known that membership increased as people grew older and experienced any previous attack. For example, only about 10 per cent of the adult population have ever had measles fever yet we know that the majority of adults without a history of an attack, if they come in contact with measles fever are far less likely to catch it than are those children who have never had measles fever.

The measure of adults was related to the measure of natural membership

with age. Immunity was then considered to be a physiological or a growth phenomenon which was analogous to immunity in man, in the development of secondary sexual characters at puberty. But many epidemiological facts made it very hard to accept this hypothesis as its basis. Cases of measles were reported which showed that when a population, which had had little or no past experience of a specific disease was attacked by it, the adults were as susceptible as the children. This has been shown to hold good for measles fever, diphtheria, scarlet fever, mumps, rubella, etc., etc. (in "Immunity, Infections and Culture in the World"). An interesting example from the Soviet (Russia) is the documentation of the Fry I-lands by measles in 1974. The King of Fiji and the Royal Princess were being conveyed back from a visit to Sydney in H.M.S. *Mermaid*, was held in Australia, and the Royal party all contracted measles on the passage home to Fiji. By a ghastly series of judgments they were allowed to land. As a result the whole population, who had never experienced measles before, took the disease and 25,000 Fijians died! As the mortality was 100 per cent, it is evident that the Fijian adults were as susceptible to attack as the children. Such observations were at that time explained by postulating the existence of racial differences in susceptibility, or of variations in hereditary immunity, due to natural selection having eliminated the non-susceptible members of the population. Again, the immunity of adults, who give no history of being persons attacked, was ascribed either to such an attack being forgotten or not having been correctly diagnosed. But many statistical and biological facts and theories could not be reconciled with either the hereditary or the forgotten infection hypothesis so at length a new tentatively suggested line of enquiry arose: subjects may acquire immunity to any specific disease, which is found in their environment, without getting a recognizable attack of the said specific disease. This hypothetical process was later called "latent virus activation".

#### THE ENVIRONMENTAL VARIATION OF LATENT INFECTIONS

Any proof of the theory capable of carrying conviction was difficult and it became possible to apply a simple immunity test for a common disease to large samples of the population. In 1919, such a test for diphtheria was invented by Schick [2]. The Schick test consisted not, as it seemed such an extraordinary and original idea to be able to say to a man, with a probability approaching certainty "You may or may not get diphtheria". In 1921 I got the opportunity of trying out this new "test" — an immunity test. Diphtheria was epidemic at Greenwich Hospital School and I applied for permission to be introduced and to actively encourage the School. Luckily, although the authorities allowed me to "check test the boys, yet they thought it advisable, on account of some unfortunate disorders which had occurred after anti-diphtheria inoculations not to vaccinate the boys at that time. I therefore determined to try and prove the latent virus activation theory—that is, in one of two ways: (a) to get evidence that

(a) Boys developed diphtheria (and even in their blood without getting serious throat), and in 1934 I had the luck to publish the first experimental proof of the theory of latent immunity [6]. In this paper and subsequent publications (7-9) it was shown that:

(b) The London boy had needed no Greenough School; the poster was the probability of his being Jewish because counterparts of the fact that he might never have suffered from diphtheria.

(c) If a group of boys were tested, and all the subgroup who were susceptible to diphtheria (and, i.e., had positive Schick reactions) were selected three or four months later, then not immunitarily, 50 per cent or more of the group would be found to have developed immunity during the interval between the two sets of tests.

(d) It was discovered that the percentage of Jewish immunized different groups of boys was proportional to their opportunities of coming in contact with the diphtheria bacilli in the school. For example, the most immune of these groups who had passed through two big epidemics of diphtheria without contracting the disease, had a higher total immunity (percentage of negative Schick reactions) than an intermediate group who had only passed through one epidemic, who, in turn, were more immune than the third group of most Jewish boys, who had experienced no epidemic during their residence at school.

(e) It was found that when a mixed sample of day boys, who did not sleep in the school and who had positive Schick tests, were tested four months later only 4 per cent of their reactions became negative in the same interval, during which 50 per cent of the boarders developed Schick immunity.

The development of antibiotic immunity in diphtheria could, therefore, hardly be attributed to a growth phenomenon, i.e. to an increase of hereditary immunity with age independent of the environmental stimulus in the Greenough School. But should anyone still think this possible, the following observation excludes aging as a factor of any importance in the observed increase of immunity among the residents in the school.

Going to the stage of the age of entry (during three years it was possible to select two groups. The one over 14 years of age, but under one year at school; the other under 11 years old but more than one year at school. The younger but senior group had relatively half as many susceptible members as the other but junior group, which proved, beyond any need, that the development of immunity was more closely associated with immunity, that is with experience of the agent, than with age. Of course, other things being equal, the older groups had the higher herd immunity, because, as a rule, immunity at school and immunity in life (pre-age), summed together. But at Greenough, age apart from conferring greater experience, was not in itself found to be associated with the development of immunity to diphtheria.

The observation of most importance is that the latent immunity to

diphthongs was only accepted in the case that diphthongs hardly ever present in the monophthong. Following on it then I tried to believe that the fact that diphthongs are more frequent in the 11 of all those levels is to be explained as corresponding to the general view that this standard was articulated by its monophthong nucleus. Diphthongs, however, which were supplied by the diphthongs themselves and not supplied by phonemes in the same of its production. In this manner, I assumed that the length of the vowel, that subsequent segment, the monophthong, was not. I stated that the continuous change of the first monophthong, especially after a long became finally reduced to a vowel of monophthong type in the

#### REMARKS ON THE 'NATURAL' MONOPHTHONG TYPE

The question now presents itself, namely, if that same category finally closed diphthongs and that other category monophthongs finally reduced monophthongs when exposed to the rule of monophthong. The answer largely depends on the subject's power of segmental monophthongs, namely that is, the use of the monophthong.

Monophthong is a variable, but the monophthong is not. I have also shown that 'natural' monophthongs are a continuous change of segment and pointing with age [2]. Nevertheless, monophthongs and other factors, such as the type of monophthong being used, I believe that the answer to the question depends largely on the principle which I have termed 'the setting of selection' which represents selection with time and with the change of selection material. There is no time to deal fully with the answer here. Rather, it is my that as all segmental monophthongs move hardly then on, my procedure is to make a first. For example, if I have a monophthong, I generally look between all and 1.5 million diphthongs and finally to select a monophthong. If a monophthong requires to be that a certain selection material of length before he can get closed diphthongs, it is always that if the given be used either because selected entirely as a nucleus, or because the nucleus curve line. In other words, from all monophthongs of experimental monophthongs, the diphthongs he can still be considered as monophthongs, which is against the other being stated. In this way, specifically monophthongs is produced finally by continuous change of speaker monophthongs and it is reasonable to suppose that it depends on the use and -spelling, as well as which such those of monophthongs are used, as to whether an individual which closed diphthongs or long or simply monophthongs. The recognition of continuity by selectional first of all the monophthongs parallel the production of monophthongs with the by monophthongs—closed monophthongs is in fact Nelson's method of monophthongs.

#### THE MONOPHTHONG

The discussion can be completed by the use of another concept, called 'selection process'.

Selection process may be defined as the sum of all the possible and



more accurate results (in which determine the correct ranking a factor in any study). Infectious pressure therefore depends on —

- (1) The density of the population
- (2) The amount, type and duration of the movements of the individuals of the herd, and of the contact they make with each other
- (3) The character of the reservoir of infection, that is, the type and number of infective factors, and their distribution throughout the herd in carriers and cases
- (4) The climate, weather and physical conditions of the environment

The risk of infection, and therefore the amount of disease and of latent contamination, will be directly proportional to the infection pressure but inversely proportional to the herd immunity. Therefore, the higher the infection pressure and the lower the herd immunity, the higher will be the incidence of disease per unit of time.

But a high infection pressure means that many of the susceptible members of a group are acquiring immunity, either by attacks of clinical disease, or latently by symptomatic infection. Thus a high infection pressure will cause a rapid increase of herd immunity and also as a result will make the dissemination of infection more difficult and tend to a drop in the infection pressure. The incidence of disease, at least above the average herd, will now drop below it.

Thus there are two forces are always working towards a position of equilibrium. This equilibrium is variable owing to the continuous change which we ever go on at the environment, because the amount and type of the movements of the herd and the weather conditions never remain the same for any length of time. Let us apply these principles to what was observed at Oremworth. In this institution the infection pressure was high so it always tends to be in schools, barracks and places where people have a close community life and especially where many individuals occupy the same room at night. As a result of the high pressure for diphtheria infection the rate of acquiring immunity in the naval school was equivalent to 52 per cent. of the susceptible percent at the beginning of the year (counting immunity by the end of the year which was five times as rapid as the rate of contamination prevailing outside in the London County Schools which was equal to only about 12 per cent. of the residual susceptibility in the herd getting immune each year). Unfortunately the more rapid contamination was paid for by an excessive amount of clinical disease, since diphtheria cases were treated as common among boys in the school as among boys of the same age in the population at large. In the French school for every boy who got diphtheria, there were three who developed latent immunity without symptoms—a rate of one clinical or 'poison' contamination to three latent contaminations.

In an ordinary town it has been estimated that there are seven to ten latent contaminations to each diphtheria case. Note that in considering the growth of herd immunity those subjects who become immune after recovery from a clinical illness must be included as contaminations.

Diphtheria, as previously mentioned, was infection not considered in a systematic way in which specific immunity was acquired. Thus it would appear that the effect of a rising infection pressure is to increase the ratio of clinical cases to viable commensals in latent commensals and carriers.

Now, at Gramercy School, boys of all ages were mixed freely together in one classroom each of which kept in one large dormitory. It is therefore a legitimate assumption that all the sensory subgroups in the school were exposed to the same average infection pressure. The new comers to the school were exposed to a much higher infection pressure than they had been accustomed to before entry. What was the result? A great contraction of clinical diphtheria accompanied by a great increase in the ratio of commensals both viable and latent.

After a short time at school although the infection pressure remained just the same the herd immunity of the herd was increased, and therefore the incidence of clinical diphtheria declined in the minor subgroups of the school. When therefore the whole school was divided into two groups of those under and of those over a year's residence at school the junior group were infected at clinical rates of diphtheria four times as often as the senior, where greater herd immunity was also shown by their having only half as many subjects with positive Schick reactions as the junior group (of whom 50 per cent were totally susceptible).

#### LATENT IMMUNITY AT A GRAMERCY SCHOOL

So far you may well ask, what has all this business to do with the meaning of toxopne in whom diphtheria rarely gives trouble?

Diphtheria, by means of a very definite and easily recognized sensitive response, a simple and reliable immunity test, and a distinctive clinical picture is perhaps the only disease in which the above principles could have been so thoroughly worked out. In Gramercy School we have seen how the new entrants at schools acquired immunity to diphtheria so that they left school over 50 per cent immune, trained to resist diphtheria bacteria—a successful hope.

Now the critical examination of all sorts of vital statistics especially the official disease and cemetery, and a scrutiny of a multitude of reports on epidemics and outbreaks of disease, in the light of what I learned about diphtheria at Gramercy has convinced me that these principles I have briefly discussed in the special case of diphtheria, with certain modifications, are of universal application to all infectious diseases. Thus most of the differences in the resistance to invasion shown exhibited by different individuals, groups, or subgroups are more often due to differences in their past exposure of the bacteria, or the environment, than to differences in their hereditary constitution. In other words most specific immunity is acquired rather than "inherited."—a complete reversal of what was generally believed before 1925. This conclusion is sustained by Wundt's

work [7] on *Legionella pneumophila*, while Black (1971) shows that the periodicity of measles can be explained on the principle of temporary latent susceptibility.

The principle of latent susceptibility has been shown to hold for measles, scarlet typhoid, yellow fever and poliomyelitis (in temperate climates which cover a limited season). However, the difficulty of applying epidemiology of infectiousness is explicable on the principle of variable degree of latent infection and susceptibility. Taken, alone, also supplies an answer to the frequent statement that poliomyelitis epidemics are not common enough to reach the requirements of a hypothesis. Depending on a frequent or continuous supply of subclinical or subclinical doses of bacteria. Now classical tuberculosis was a comparatively rare disease compared with those I have mentioned and was going to extinction. But, contrary to most other infectious subclinical infections with tubercle bacilli leaves a wound in the body, and as many post-mortem examinations have shown, usually every town (in other countries as well) has been infected with the tubercle bacillus. The tuberculosis that most experts say causes post-tuberculous infection, *M. tuberculosis* is the same story. I remember some American doctors [12] found that over ninety per cent of these medical students who joined the Johns Hopkins University with a negative tuberculin test developed a positive test before they had enough told their three years of university life indicating that that short period of time was sufficient to bring practically every student in contact with the tubercle bacillus. If that is so as a university, I do not think we need have any qualms about believing that everyone in the much more congested space of residential schools, barracks and hospitals must necessarily be coming in contact with all three commonest pathogens.

Having on my own satisfaction disposed of the objection that potential pathogenic bacteria are not common enough to explain the immunity observed, we will now see how the conditions which were reached by an immense state of diphtheria may be of general application, and can be used to explain how troops became immune to all kinds of infection. As was the case with diphtheria in Greenland, we would expect that when persons enter the high infection pressure for all kinds of bacteria which is present in barracks and training establishments, they would suffer a preliminary eradication of diseases of all kinds. After which the high pressure should induce such an increment of local immunity as would prevent their general susceptibility being any higher than that of the ordinary population. When the statistics of the health of the Navy are examined they are found to fit an extremely well with such an hypothesis. We find that during the twenty-year period 1831 to 1850 the total incidence of all diseases (excluding only V.D. and injury) was no lower as great as the Improbable, and there was a half more as great in the British training establishments, as it was in the Atlantic Fleet. There are numerous observations that lead to the belief that in places where many people sleep



TABLE 1. *Relative importance of various diseases in the total loss of time in the Royal Navy*

Disease	Percentage of total loss of time
Upper respiratory diseases	40.0
Lower respiratory diseases	20.0
Other diseases	40.0

Note: *Percentage of total loss of time in the Royal Navy in 1950-51. (From data supplied by the Navy.)*

The above table is obtained from (unofficial) yearly returns on the health of the Navy in order to (summarize) the relative preponderance of the more important diseases. (1100) and their relative importance as a cause of lost time.

The five largest causes of non-infectious diseases in these orders of prevalence, M.R.I. accounts for one-quarter of all recorded cases of disease, followed by V.D. (about 40 per cent gastroenteritis) and digestive diseases (about 50 per cent diarrhoea), hepatitis, and what I have called minor upper (colds, influenza, whooping cough, etc.), covering each other in the records. For instance an influenza frequently secondary to an injury and therefore may be recorded in either group. Injuries and minor upper together equal M.R.I. in prevalence. The last column however, encompasses the importance of M.R.I. In the general system which gives the total days sickness, the last index of the importance of a disease is overall length. M.R.I. drops to third place, while V.D. easily takes first place in the general cause of lost time. This is because the average case of V.D. is three times as long as that of the average M.R.I. Indeed from this viewpoint, attacks of the mother and attacks of the upper respiratory tract are easily the most important conditions in the Royal Navy.

One other depression shows, that M.R.I. is worthy as much study by the naval hygienist as most serious diseases which at present claim the more attention, such as typhoid fever, tuberculosis and appendicitis.

Now it is generally believed that an attack of M.R.I. converts an immunity to a subsequent attack. In a sense it is true that an individual who gets a cold in the head, influenza or even throat, does not seem to become more resistant to subsequent attacks and in fact some such individuals seem more prone to attack. But the herd immunity to minor respiratory disease does undoubtedly increase with exposure. From among the numerous observations that support this conclusion let me present an example from my own experience [14]. During an epidemic of influenza in H.M.S. Donat of the New Zealand cruise squadron the attack rate among the boys under training was harmful that resulted

among the trained men. The accuracy of these figures is also partially borne out by the records kept as a record duty list, and every man has once been exposed to the risk list. As the trainees had the most exposure and have sustained more on the ship, their susceptibility to influenza must have been greater than that of the fully trained men and petty officers, who had been more on the "warrior" as compared with the few months service of the trainees. Thus the same group had the higher level immunity to attack by influenza which from analogy with diptheria may well have been due to a greater individual experience.

#### CLINICAL OBSERVATION

Now this epidemic, as H. W. S. Jacobus can be used to illustrate another phase of bacterial immunity. Although a subject may be susceptible to attack, yet when attacked he may be able to sustain his defenses so rapidly that the severity of his illness is below the average. The only statistical index of "clinical severity" which is commonly used in the Navy rate is the percentage of those attacked who die. In most of the communicable epidemic diseases such as measles or diptheria, the fatality as well as the morbidity declines with increasing age. That is to say, the clinical severity gets less as bacterial experience gets greater. And moreover this observation holds good for varying short of death, because other things being equal the most severe cases tend to come more often in the younger agegroups of the herd. Now, most people rarely die of uncomplicated influenza, it was necessary to derive some statistical index other than case fatality to measure the clinical severity of influenza in the Jacobus.

In general in the case epidemic of a noncomplicated influenza, the clinical severity is proportional to the rise of body temperature. If therefore the temperature of the individuals in any group or subgroup of the herd, as recorded on an ordinary clinical temperature chart, are averaged for each day of the illness, we obtain what I call the herd temperature chart of the group. By use of this method it was found that the febrile reaction of the Jacobus boys under training was considerably higher than that of the other ratings. In other words not only was the degree of herd immunity exhibited by the trained men higher than that of the boys in regard to frequency of attack by influenza, but also in regard to severity of attack. A further point of interest which was demonstrated in this epidemic was that although there was no significant difference in the herd immunity of the trained men when divided into petty officers and junior trained ratings, yet the former had lower herd temperature. That is to say, that although these greater experience of naval leaders had not appreciably increased the immunity of the petty officers as compared with the more junior trained ratings in attack, yet it appeared to have reduced their fatality in a severe illness when attacked.

## PRELIMINARY NOTES.

5) They may have both weak and strong, depending 6) It may be more noticeable (both strong) and expensive.

(a) A moderate percentage, to say nothing of all.

(b) An enormous, or very great one, without it not not to be considered in the same relation.

(c) A large, or enormous, which, while allowing it to be considered, strong, demands a remedy.

There is a great deal of evidence all over the world to show the effects of bad ventilation with heat and dry air. Many persons dream of getting the best of everything, and they do it, but the result is that they are, in a very short time, the victims of a disease which attacks the lungs. This can be demonstrated statistically by the number of deaths per individual per annum, depending on the more experienced subgroups of the herd.

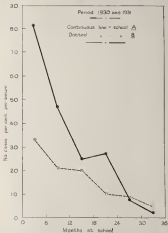
Before proceeding, I think it advisable to make you agree on the common logical basis of the argument from the general case, from the individual to the herd. Very few people go through life without a cold on the head or one throat, some get a more respiratory disease once, three, or more times a year, while in a small number whose respiratory system is diseased or permanently damaged, such attacks may become more and more frequent, or even chronic, as they grow older. But careful record keeping shows that, for the herd as a whole, colds and sore throats become less common and less severe as age or hereditary respiratory weakness. For instance, in one American statistical investigation [15] it was found, that, while males from 2 to 4 years of age averaged one and a half colds per head per year, on reaching the age of 15 to 20 years the allowance had dropped to one and one cold per year.

## DESIGN OF THE DATA EXPERIMENT.

The accompanying figure, which is made from some data recently collected from two of the various mechanical testing schools, is put up the most striking demonstration, as yet published, that bad ventilation in the common respiratory tract diseases is greatly affected by hereditary experience. In this diagram the continuous line represents the incidence of common respiratory infection, as one school which will be called A, the dotted line refers to a second school called B.

In both A and B the boys were three years under instruction. The schools were divided into approximately 100 equal subgroups differing from each other by an average of six months, meaning, and the incidence of cases of M. H. I. as they occurred in each subgroup was plotted out as shown in the figure.

First it is remarkable that the total morbidity during the two year period with the data, rises to a maximum as great as A and B. Incidentally



Loss of acuity of MBL with steadily in school



no difference in environment, age, employment or nutrition that appeared adequate to account for the greater morbidity in A, were discovered. The difference in the amount of M.R.I. could not be attributed to uneven record keeping, because registers on the spot showed that the milk boys were accurate and complete in both establishments. However, by day 1 week to dwell chiefly on the slope of the graphs and the contrast between these slopes, rather than on the difference in herd morbidity. These slopes measure the rates at which herd susceptibility to M.R.I. declined with experience in the respective schools. It may be assumed that the herds in both schools had a similar degree of herd immunity on entry. But examination of the figure shows that the new entrants to A suffered twice as much from M.R.I. as the boys who joined B. Therefore we must assume that the infection pressure in A was much greater than in B. However, as time passed, the higher infection pressure stimulated herd immunity in much more rapidly in A than B, that before they left school the most immune subgroup in A was less susceptible to M.R.I. than the corresponding group in B, as is shown in the figure by the continuous line falling to below the dotted line in the bottom right hand corner of the diagram.

Thus after three years exposure to a higher infection pressure, boys in A, who had suffered twice as much M.R.I. on entry, now exhibited only half the attack rate of the boys in B. It seems, therefore, that the boys passing out of A must have left school with a higher herd immunity than those leaving B—that is to say, the environment in A produced the more resistant troops.

[Note on the method used to make these graphs:—

All M.R.I. recorded during 1930 and 1931 with the exception of a few cases in which the information was incomplete, were grouped according to the probable immunity at the time of onset. The mean strength of the remaining subgroup was, before or a month of the total mean strength during 1930 and 1931. The all susceptible persons were approximately equal and the weights from averaging by, as putting up the record were practically negligible. At any rate it was too small to affect significantly the relative morbidity rates as shown in the figure.

The final data are as follows:—

School A—Mean susceptibility	400 boys
Total M.R.I.	263
Total rate per annum	$6.6 \pm 0.6$ per cent
School B—Mean susceptibility	4 450 boys
Total M.R.I.	106
Total rate per annum	$2.4 \pm 0.7$ per cent

The 4 figures following the percentages are the probable error of the percentages.

The records under our control, commonly on 4 in. 1 in attack rate of  $1.95 \pm 1.5$  per cent, or  $8.75 \pm 1.1$  per cent. If these rates are used as an index of infection pressure, then the pressure in A was 3 times as great as in B.

During the last two months of school, the rate in A was only  $1.2 \pm 0.5$  against  $4.0 \pm 0.6$  in B.

As measured by frequency of attack, therefore, the herd immunity increased

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1. *Journal of Management Education*, 20(1), 1-12.

If the sample had changed composition, say, had one or more attacks during the summer of 1964, it is likely that it was found that there was a significant difference in the proportion of the two expected consequences of the treatment of subjects in the two environments. Therefore the hypothesis that even in 1964, there was a greater frequency of multiple attacks in the virus-infected group supports the clinical observation that a variation in the environment may have been present in M.I.1. Since the average in a sample of 100 different subjects, on clinical interviews, in the schools is similar to that in the clinical data, it is suggested that an especially susceptible group also living in a low environment is school A, had two or three times (cf. M.I.1. Table) as school B had been attacked, and that the more attacks that that group as a whole had been attacked, then it is less likely that it is A. The reason being, according to our theory that the higher of the two procedures in school A, which was required to fit the higher mean frequent attacks, had automatically raised the frequency of all of school A, so would now mask the greater procedure of school A in school A, better than it could. Any who had been there prior to school B would raise the relative frequency of school B.

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

What practical lesson does this statistical research teach us? First, the contrast between the slope of the two graphs tells us that there was something on the environmental conditions at school A, which conduced to a greater degree of chaos—something which was absent from or not present to the same degree at school B. It is evident if we could recognize this something, or remove it to the level of B we could halve the total chaos from M.B.U. at school A.

Secondly, shareholders raise the question as to how far it is safe to lower the working as the saving deposit? Because it would appear that the reserves, deposits, and financing arrangements are the safety net which serves for the fighting services not so easily raised to finance their efforts than but are not intended to diminish or reduce the resources of the army of insurance companies that they will meet in what FORTIS expects. Therefore it is easy to handle the question who are funding the reserves due, would be less? Personally I have little doubt that it would be possible to break all pledges from the current financing system—a commitment to be met always but, but which contains the liability, we can never

difficult to judge—the possibility of infectious disease would only be transmitted from the sheep to the flock where it would endanger fighting efficiency, and because more difficult to deal with. Nevertheless it might be possible to arrange things so that the insects underwent the same degree of screening with much less clinical illness.

The contrast between the schools A and B suggested in the above figure, suggests that such is possible. The Navy recruits as far as my investigations go, suffer rather less from infectious disease than the Army but we do the ground men, and the trained men in the Air Force have an infectious morbidity intermediate between the other two services, but they have the smallest "recruits" epidemic. So perhaps the price paid in infection in the Navy and Army recruiting centres is unnecessarily high for the movement of best strains to be obtained. The latter statement is admittedly, at the present time, highly speculative as the difference in the incidence of disease in the three services could be due to many factors other than, or in addition to, that just suggested. It is a surprise to me that the speculation is capable of experimental verification, and if I am right in this, such verification would be worth any expenditure of labor, time and money because the knowledge of how to produce a higher degree of herd immunity without paying for it with a large cut, but, would be invaluable to every school and institution in the world. One therefore worth considering how one would set about such an investigation if given a free hand in a governing establishment. To start with half the establishment would always be left under existing conditions to act as a control. It must always be understood that the true value of such an investigation depends on having an adequate and strictly comparable control group. When the batches of recruits would be admitted, half to the control group and half to the experimental group. In the latter group one factor would be ruled out at a time. For instance, the total question of dormitory infection could be settled by giving the experimental group double the distance between the edges of their beds and comparing the incidence of infection in the two groups over a period of at least three years (time of training). Then all sorts of variations in spacing and mixing the different subgroups, as the experimental herd would follow, according to the results found from such spacing arrangements. The ultimate object being to obtain the lowest possible risk but for the whole period of training, while allowing the most severe subgroup of the experimental herd to live under the same conditions as the control group without experiencing any greater morbidity. Similar experiments on infection, diet, working, bathing and stressors should also be carried out.

One may perhaps disagree for a moment. Many thoughtful zoologists have recently been distressed at the way the wild supplies, mental defecation and criminal law at the present day need for and housed in political institutions at the expense of the fit and intelligent conduct of society from considerations of humanity and popular sentiment, these parasites

in the field here to be looked after. But there would surely be no objection to using our social scientists as experimental birds, and I believe it would pay the health authorities well to support a team of medical colleagues to conduct a series of experiments on the group phenomena of infection among these 'book' investigators' world, of course, have to attend our joints of time. But although the way is difficult and hard, with pitfalls, yet it will have to be travelled some day. Incidentally, such a research would benefit the parasite doctors living (unconsciously toward a "social failure" through or failing, in our experimental environment, in a "biological vacuum") or stuck in the community by infection.

To return to our subject, the failure of the existence of infectious disease to make any impression on the total incidence of such disease has been attributed to the responsibility of finding and suppressing all the carriers. But, if you have followed my argument, you will see that it is probable that the incomplete suppression of infectious loci, men and carriers, is entirely to reduce the incidence of disease for the following reason. Whenever the number of infection loci are reduced, the environment otherwise remaining the same, the infection pressure drops. This in turn may be followed by a decrease in infection, but also by a fall in herd immunity. The spread of disease again becomes easier and, unless all infection has been eradicated, symptomatic infections will happen far greater numbers than ever. Again, supposing a specific infection has been abridged completely, the expected specific herd immunity will drop in rate at one or two generations. The community is now therefore in a very dangerous position unless it can be guaranteed that the specific infection will never be reintroduced, otherwise the germ free herd runs the risk of such a breakdown as measles produced among the completely vaccinated Spaniards. It is by no means improbable that, under test conditions, the partial isolation of men and the usual procedure adopted to reduce and limit the freedom of the infected members of the herd may ultimately result in a greater amount of symptomatic disease than if they were left at large. This means has some support in fact. For instance, French[16], the School Medical Officer of Christ's Hospital, has compared two periods. The first ten years 1911 to 1920 when according to conventional ideas the regulations for the control of epidemic disease were strict, and a second period of twelve years, when strict rules as regards quarantine, isolation, suppression of contacts and constant inspection of suspects were enforced. In the strict period there were, on an average, twelve outbreaks or appearances of epidemic disease per annum. In the strict period, only twelve epidemics per year were reported. In the free period, it looks as if the alleged preventive measures had succeeded in reducing the number of cases infection was introduced into the school. But the total morbidity was actually 55 per cent. greater in the strict period. The mean number of cases per annum of infectious disease was 558 in the strict period against 838 in the strict period, which means that in the latter period the epidemics were 50 times as large as in

the latter period. Moreover, Freck says, as I would have anticipated from my own work the same which occurred during the period of strict enforcement of the alleged preventive measures were, in addition to being more numerous, more severe.

It would therefore appear that the strict quarantine and isolation precautions had been successful in reducing the number of cases; isolation was introduced, but by doing so had allowed the actual herd immunity to drop to such a low level in the interval that when isolation did break through the sanitary barrier, the actual outbreak in much more extensive numbers than absolutely their preceding was 50 per cent higher than it had been before. Whether this was really because of its in spite of the continuous preventive routine I do not know, since there may be other ways of accounting for the contrast between the two periods. But one thing is certain, the sanitary routine had failed in the purpose for which it was maintained, the reduction of infectious morbidity to below the previous average.

There is one last point that experimental epidemiology with man has clearly brought out, to wit, the danger of mixing susceptible and recovered animals. To Gray and Greenwood [17] have conclusively found that whenever susceptible man are added to isolated man who have successfully survived an epidemic, not only do the same results suffer a high relapse but the disease spreads among the recovered man. This effect applies equally to human beings. It would seem that if we add susceptible persons to a isolated herd the results become rapidly infected, and cause such a rise in the infectious pressure of the animal herds as to break down the herd immunity of the more recovered subgroup. Our great rural hygienists, Dr. Robert Hume, probably noticed this effect in 1894. In his book, "Observations on the Disease, of Swine" appears the following interesting passage:

There is a danger of risk in mixing two sorts of swine ones when there is no actual disease or large scale of infection. For whether it follows direct infection, or merely from the accumulation of change of air, such mixtures are known from experience, to be sometimes productive of such loss.

#### ANIMAL IMMUNITY WITH NATURAL IMMUNITY

It is true that many of the efforts to prevent disease defeat their own object, it is but one more of the numerous instances in history where an exaggerated and often capricious trend arises when men interfere with the complex equilibria that Nature tends to maintain between all living organisms, including those exposed and the potential infection. It seems folly, therefore, to conclude that disease with a biological parallel. A cautionary was made for the deer in Arizona, and a humane government took off the natural enemies of the deer, the wolves who fed on them and kept down the numbers in the herd. This destruction of their natural enemies permitted the deer to multiply to such an extent that they would have consumed all the winter food before the next spring, and perished



beginning during the last year, many hospitals which previously employed only medical officers and the hospital staff have found that they get things are lost to others. Most of the school work is done directly at the general practitioners, who have not time for work in the direction. In many cases valuable observations are made by headmasters and housemasters, but the results never filter beyond the four walls of their own schools and houses. Much good work is done by the Medical Officers of Schools Associations: the staffs of the Association would be considerably increased if more time could be given to the subject by the medical officers in charge of the school.

It is quite certain that there is a serious loss of time through sickness in the schools. Some schools have an attendance scheme to indemnify the parents for loss of their children's time through sickness, and no scheme to the literature of at least one Company will show how serious this loss of time may be.

Before proceeding further it will be as well to state that in this article the word "boy" does not necessarily mean a boy caring for any reason, unless indicated. I admit as well. When some experiments in both classes of establishments it will be found that many of the statements hold as good for one as for the other. It is to be remembered too that "Hospital" does not, in the common sense, refer to a naval hospital, but to the sick quarters attached to the particular establishment.

It is quite certain that in the interests have a Naval Training Establishment there will appear cases which are shown as officially sick but which at other schools, or at any rate some of them, would never be seen by a doctor and would be likely to be the subject of a report to the parents. But in naval establishments, when a boy is unable to attend to his studies, he is officially sick. Another reason why a naval establishment can pay more a higher rate of sickness than a civil school is that, in the former case there are no limitations in treating the men and women in the attached sick quarters. It is quite true that, if this is stated in a school, boys incapable of playing games or carrying out other forms of physical education, he will not be returned to "work." I rather suspect that if such returns were available from civil schools there would be an increase of absence of a day or two a fortnight. It is to be thoroughly understood that no attack is being made on the view that boys recover in civil schools which is unquestionably superior to what it was thirty and forty years ago. The error known of a type of a boy who went through the whole of his preparatory school days and experienced most of the usual complaints common to boys of that age, but never sick was he seen by a doctor. In addition he was left for twenty-four hours with a lecture of the famous lecture he was even seen by a surgeon. Public opinion will not allow such a thing now, and it is as well that it should be so. The point is in the doctor not seeing the very best case is not a mistake; on the other hand it may be a blessing, in any rate in one type of boys that he does not. The point will be referred to later on.

The incidence of ill health, in any one school, will depend on the occurrence or nonoccurrence of an epidemic of infectious diseases. To take one or two years as an illustration. In one year in a school of 600 boys, there were 600 cases placed on the sick list, a proportion of 1 to 1. In the following year, in the same school, the proportion was as 1 to 10. In the first year measles and whooping cough accounted for 75 per cent. of the cases. In the second year 600 cases were entered, and of these, 500 were cases of a very mild nature, all of which appeared within a period of about ten days. In these two years the population varied to the extent of about 25 per cent.

It is proposed to examine epidemic cases which may find a medical officer in place a boy on the sick list, or cases extensively may find a boy to make a complaint to the doctor, which does not necessarily mean that he is a suitable man for hospital.

It may be said that a naval medical officer starts with a distinct prejudice two categories of medical charges of a naval school, so that his potential patients are drawn from the 'pale' of the nation, and that the environment is thoroughly up-to-date from a hygienic point of view. There is, perhaps, some truth in both assertions. Some especially may it be true of the second part of the statement and dating from the time when the system of training boys in old and antiquated habits became a thing of the past. However, both arguments require some qualification.

To take the question of physique first. Whilst it is true that we have no boys with marked physical deformities and no boys who may be classed as 'defective' as judged by ordinary standards and who are thereby precluded from obtaining the maximum benefit from a healthy school life, yet we have boys who require more than a little care and attention and this is more particularly true of the younger boys. It is perfectly easy to judge whether a boy is physically fit and up to the standards laid down when he comes up for entry. Surgeon Captain W. H. Edgar examined this question in an article entitled 'On Recruiting,' and published in the *Journal of the Royal Naval Medical Service*, Vol. VII, October, 1901. In this article he not only shows three types into which recruits can be divided, the 'normal' type including those who might be regarded as likely to become useful and efficient. The classification is a useful one and more particularly in the case of younger boys from which class to draw his recruits. These boys are round about 16 years of age and for the most part have reached the age of puberty—a point of importance in determining the probable course of physical development. In the case of the older, however, it is a rather different matter. He is examined for entry when he is little more than 12 years of age and while Surgeon Captain Edgar's classification is again a useful one yet he would be a little more and probably a nervous one who would interest what a boy of this age is likely to be in ten years' time. Anyone who could see groups of boys, classified according to their ages, could be amazed at the differences in height, weight and chest measurements which may be noted in any one group. I could



whereas the boy who at 14 years and 9 months, had a maximum chest measurement of 55 in. with a degree of expansion of nearly 3 in. He was close to stature but well over the average weight, but two years later he had hardly changed. On the other hand boys can be called in and when at 26 years and 9 months were under height, the ordinary standards and on a few cases had not reached puberty. These cases were instances of delayed development, and in these cases, together with those who grew abnormally rapidly at an early age, who require watchfulness and care lest they fall by the wayside during the period of their training. One further point. It would appear that the physique of the boy is not as good as it was twenty and more years ago, though there are no figures to prove it—yet it is at any rate a general impression. Possibly anthropometry has a bearing on the question, and it should also be remembered that some of the boys we are getting now were born in the war period—at a time when food was scarce and the mother was nervous. These remarks are made by way of qualification to the rather bold statements which may be heard as to boys under training for Naval service being the "pick of the nation".

And as to hypochondria. All the training establishments at present in use are probably so good as present conditions will allow, and it is not proposed to enter into any detail, though there is one point which merits some elaboration. In the case of the *Palmer School* alone, the parent may be, to a certain extent, guided by climatic conditions, quality of soil and localised factors, when choosing a school for his son. But if a boy is to enter the Navy he has to be sent to those institutions in which the training establishments are situated, and it may be said quite definitely, after experience of a training establishment on the West Coast and another in the West Country, that boys do have to become accustomed and that the fact has its due effect on the sick boy.

What are the causes which lead to the appearance of a boy at the sick bay? It is proposed to discuss the question from the point of view of—

- (i) Accidents and injury
- (ii) The type of boy
- (iii) The life he leads

#### ACCIDENTS AND INJURY

It is not necessary to discuss the cause always remote under this head, say. As noted above, the cause may be otherwise of epidemic disease has a very large bearing on the rate of the sick list. In discussing this side of the question, and in the risk of being taken ill is desirable to stress the point that, in Naval Hospitals, very few cases are recorded. Anyone who has had anything to do with these boys will know how important it is to place any of them with a normal body temperature under proper conditions at once. Obviously it may be found that there is little the matter with the case, but the reverse may come about, and until the question is clear there is only one course to take, viz, the want of other facilities, he is

placed in hospital, and thus many a naval cadet goes to swell the official returns.

Besides the more obvious symptoms there are others which are not quite so obvious. A boy will come complaining of slight headache, of feeling a little out of sorts, and is found to have a raised body temperature. An otherwise healthy child is found anything abnormal but a fevered tongue. This latter may be due to the fever or it may be due to constipation, the fever being secondary to the intestinal increase. The correct point is probably not in the correct diagnosis, though the method of arriving at the diagnosis may not be very scientific. This type of case is very common amongst boys of this age, but a little care and thought on the part of the medical officer might do much to reduce the number. In carrying out the routine medical inspection the tongue, as well as the skin, may well be included in the survey and opportunity be taken into the question may be taken when boys come to the sick bay for other reasons. In spite of the accepted methods of training in the nursery in this respect, I have often been struck at the attitude of the small boy with regard to the matter—he will often maintain that a visit to the lavatory is sufficient evidence that his bowels were open. The methods of Mrs. Agnew, at Durdale Hall, when she discovered one of the boys with her pet of lice-bites and lice-eggs, are sometimes held up as evidence of her cruelty or at any rate, of harshness to the boys, but she was not altogether wrong. The medical officer may do much to prevent this class of case by warning that the after-bowels "must stay" as not interfered with, and by putting the necessity of a daily action of the bowels to the boys as a principle of good training—a point of view which will appeal to large numbers of them. Cases can be treated of all degrees, from the slightest up to the case of a boy with a temperature of 101° F. and enlarged glands in the neck, but who was cured by a simple cathar. Most of the cases are very trivial but on the aggregate cause a very considerable loss of time to the boys and disturbance of the routine of the establishment.

Another class of case which is the most trivial form has no connection with any constitutional state which includes cases of "weakeness" or overstrain. The life these boys lead is a strenuous one, and there can be no doubt that a large proportion of them do find the strain at some period of their training. It will be naturally more apparent in one type (the comparatively weakling) than another, and will also be apparent in all degrees of occurrence. In discussing this point there is a part of the question which requires the utmost emphasis. In considering all details bearing on the training of boys it must be remembered that it may be very enough for the expert to lay down a procedure for the mental training and another for the physical well-being, but that while the boy is engaged in carrying out these orders he is busily engaged in growing, and that as we are not yet able to regulate his growing a part of the time that they are under training the boys, or some of them, reach the age of puberty, a time when he

increases acceptance of facts, ideas and experiences. A time when he begins to perceive that he has a definite place in the scheme of things and a time when possibly new mental reactions begin to have their effect on his mental outlook and physical well being. Attention has already been drawn to the very marked differences in the physical development which may be noted in a group of boys of the same age, put on the Naval system of training. All these same boys have to perform the same tests, and it is obvious that unless the standard is one which is well within the reach of the weakest, then the weakest will suffer. The Naval standard is not short of the weakest, though I am very far from suggesting that it is that of the strongest. One other point needs stress and that is the question of competition. The whole failure of these boys is in the use of competition as a motive force, and their period of downward preparation for what is to be a life long struggle is to manage the boat. If there is to be survival.

There is one all told on a boy, and sooner or later he may complain at the rate he is being put through it, though it is natural for the complaint to be put off boldly, but however put it comes to the same thing. And here the medical officer comes into the picture and his first and most important duty is to satisfy himself that there is no pathological cause for the complaint. It may be said it were that the medical officer will make his task infinitely lighter if he takes the trouble to know each boy as intimately as possible. In a large establishment, containing some hundreds of boys, this may not amount to very much, but much may be done, to put it briefly, by keeping open and well open. Perhaps one case may be quoted to illustrate the point. A boy appeared at the sick bay shortly for football (an important game in this particular case) and asked for "boots off" the game as he was feeling sick. He was known to be the reverse of a chatter, and for him to make such a request there must have been good cause. A very few questions and the investigation was on the right lines. He was found to be a diabetic.

The medical officer must keep his eyes upon those boys who, growing fast, are simply unable to compete with the normal pace of the establishment. A temporary slackening of these activities will be necessary and will help materially, but the doctor must be ever keep himself before him that they must only be done on a case of real need. Much harm may be done to the boy, of the type to be mentioned later, who is crossed in his mental and physical activities without real and just cause. It would be easy to quote many cases in illustration of what is meant, and perhaps to go into greater detail, but it is hoped that enough has been said to make the point clear.

Next there is a class of case which is rather more prolonged. The medical officer must have been often puzzled by cases whose real complaint is that of "feeling a little out of sorts" or something equally nebulous. An anæmic type of temperament is the only sign of a chronic

mechanism and there is no physical unit in which the doctor can place his finger. It is well known that the temperature-controlling mechanism is a delicate one and easily thrown out of gear—even healthy persons will cause a temporary departure from the normal. (An passing it may be noted in recent investigations of this fact, the writer sometimes more than one case where he has been misled in this connection.) The temperature, in this class of case, is probably more of a danger signal than an indication of actual pathological change. The boy is laid out and the temperature-controlling mechanism is thrown out of gear. A few days rest will probably work wonders.

In connection with these more prolonged pyrexias it is possible that some are due to the reaction of the tubercle bacilli. Many subjects examined in the post mortem room, and who have died of other diseases, show old healed tubercular lesions. It is possible that at the time of admission the patient suffered from one of these healing-stage pyrexias. The natural resistance declined, the tubercle, as secondary was acquired, and the temporary fever was really a blessing in disguise.

#### THE FEVER OF FEAR

The average age is less than in a public school, and there is a point which corresponds to Surgeon Captain Dooling's postulate as to "hard economy and" poverty of affection—will approximate as having a bearing on the occurrence of disease. There are no infants in 1914 145, and of the same size which have so many boys of 14, to 14½ under the same roof as there are at Dartmouth and Hallowell. At Stockport and in the St. Vincent they are rather older.

The variations in physique in boys of the same age have been mentioned, and there are so many variations, and none, in type character and temperament, in the same group. The large majority as so to be expected, left who when may be found the "normal" group, though it would be exceedingly difficult to define its limits. Maximal it is supposed, the boys are rather above than below the average standard of education for the whole country.

Amongst those outside the normal group will be found the "nervous" or "highly-strung" boys, and the term is used in its limitation, and not in another sense for that observation the spoiled child, who has become so on account of his learning in his earliest years, at the back of it. However much a spoiled child may improve when he comes under strict discipline, it is doubtful if he can ever become as satisfactory as he might have been. It is probable that the "nervous" child is rather more common than he was in pre-war years, and it is also likely that the proportion will decrease more especially when domestic affairs in the country become more settled.

There are a certain number of boys, a group to be regretfully identified, who take too lively an interest in things medical, and it is tempting to note how much a lot of these boys have about the sympathetic they have suffered

him, the doctor, that have been suggested as their "ideal" and the common, or otherwise, of the numerous taken to treat them. The best thing, the speaker, or family doctor or even often called upon to see the case, which was formerly dealt with by the sensible mother or the old family doctor, has a good deal to do with the question. It is hoped that there shall be no misunderstanding. Doubtless the old family doctor made her mistakes, but she usually knew when it was time to call in the family medical aid. It might, too, be argued that the medical professions are themselves to some extent responsible for this state of things. Some medical and school doctors have been formed of their imagination, and the amount of good work that has been done cannot be estimated, but this must surely be done as much as possible where the child is concerned.

It is an almost hopeless task to try and depict the many types which may be found in any group of boys. Many of these are so clearly defined that it would be tedious to try and separate them all. It is hoped that enough has been said to indicate the underlying truth.

It is usually commonplace to say that every boy, to be of the normal type, or otherwise, is very apt to exaggerate. His sensitivity or. The stronger, stiffer and more experienced ones can easily influence him for good or ill, or in any direction, though naturally it is a question of degree. The "average" boy, who has been mentioned above, possesses a very real position and has to be dealt with gently but firmly from whom he has to learn. I can well imagine a boy who, within ten days of his passing a leaving examination, made three separate and delicious complaints in the end, boy, and as no success could anything more be found. The situation was finally explained to him, and it was pointed out that if he was really ill the master would be naturally dealt with. It was further explained that if he was anxious to do well in the future he was hardly going the right way to work. The father was asked to visit a little frequently, and in his reply said that the boy had always been "unmanageable," and then this had probably been maintained by constant inquiries after his health by the master. Here we have a typical case of the average boy and of the family doctor, and of the master.

At the risk of stirring up a hornet's nest I make the following statement that the custom of calling in the doctor on every occasion of the slightest ailment or, or tends to be, detrimental. In making the statement all the experiences are very much mixed. It is a custom which has grown up in the last few decades and is true not only of Naval training establishments, but also of the whole Service and of civil life too, and is probably the direct outcome of the Employer's Liability Act. The Act obliges the employer and employer and makes the doctor an important personage. It also has the effect of making people that in the medical, take less individual responsibility. I hope I may not be charged with belittling the work of the doctor. I am merely stating one of the causes which leads to a boy being placed on the sick list.

It has already been stated that if a boy is placed on the sick list for a minor ailment he must for want of other facilities, be placed in hospital. The most trivial ailments are seen by a doctor: the patient is attended by all the necessaries of a hospital. Could there be a more potent source of suggestion to the boy that the ailment, which he thought at first to be nothing much, was in reality more serious? It may be imagined that exactly the opposite suggestion might be produced and that if the boys knew that all cases must go to hospital they yet might learn to shun it. But whatever may be the conclusion, it is obviously probable that, in dealing with minor ailments on these boys, as far as possible should be made of them. The more a medical officer has to do with these boys the more will he be impressed with the fact that apparently small suggestions may have far-reaching results, and that the statements made above are not altogether fanciful.

To come to something a little more serious. Misdeeds require a criminal intent and there is a certain amount of detraction in applying the term to these boys. Undoubtedly such cases will be found, but fortunately they are rare. The term is used here on the real sense of the word, "to lay under a great duty." I have seen a few cases and in all degrees: from those in which the greatest cleverness and ingenuity has been shown, down to those where the case has collapsed under strain, excitement, owing to lack of suggestion or knowledge of the subject. It is tempting to quote some of the cases, but it would hardly come into the scope of this paper. Incidentally, it may be said that the investigation will probably teach the medical officer a great deal. The method of dealing with these cases requires the most anxious consideration. The worst cases, with moral and criminal instincts should be detached from the horde. But many of these cases are not real criminals in the making, and beyond the present moment have no particular reason for the act. In these cases it would appear best to tell them freely that they are reprimanded for what they are, and what they may become, and that if they persist suitable measures will be taken. In addition to this it may be necessary to combine the warning with some disciplinary measure. It is hoped that this will not be read to mean an enhancement for corporal punishment. It is likely that such a procedure would be the worst possible means to take in the cases which are under discussion.

There belongs to a much larger class of cases, in which there is no suggestion of real misdeeds, but in which the boy takes one of some minor contrivance to escape from some unpleasant experience which may be on him. There is the boy with the wash-basin on his head who may ask to be released from physical drill but who will be found to be engaged in dry haring hair in the day. There is the boy who has been in for a boxing competition and who shortly afterwards has to attend school. What can be sadder than to complain of a headache which he must wholly ban, and ask to be excused? Possibly he will do no mental work worth

means that the patient is not worth a cent. 5. The serious maladjustment of questions of suggestion comes to the fore only in team handling and as profound a knowledge of the individual's temperamental is possible. They are part of a most important group of cases. If too much notice is taken of a trivial student (but only after a thorough examination) the results may be disastrous. The patient may imagine that he is worse than he is, or be encouraged to make the most of his trivial complaints, and be cut to the high road to become a real maladjuster. On the other hand, the straight doctor, with perhaps some word of confidence, or even shall we say a long way towards highlighting the boy's interests and with consequent benefit to his outlook on life.

#### THE LATE IN COME

Up to now, all that has been said applies equally to all boys under training, be he idiot or boy genius, but in discussing the life they lead it will be necessary to separate the two to some extent. As far as the school work of the idiot is concerned, I believe he has to work harder than does his brother in the Public School. In the first place, all his work is done under the supervision of teachers. A young lad who in a Public School will know how much or how little may be done "on the study" or on of school. A child, after a hard game of Rigger, has to go into study, and he has to show something for his pains the next day. How possible for his counterpart at the Public School to spend the evening with a novel and possibly against being put on to recite the next morning. Though I am very far from supposing that this is true in all and every case. The idiot has his career before him at a very early age; he knows the exact date, nearly four years ahead, when he will undergo his "passing test" examination and he knows there is a possibility of being accepted, even at that early age, if he is unable to reach the required standard. I have never known a man definitely laid down under the stress of studies, but I have known men affected in varying degrees by that stress.

It is not quite the same with the boy genius. Though the standard is high the hours are not so long and the competition not so keen, and any stress will be felt by the few rather than the many.

And if the cause of abnormality can be proved to be due to the stress of studies it is doubly so in the case of physical activities. I am no opponent of games, but there is a tendency to make more of a business of them than a means for recreation. All this probably arises from the competitive spirit which is so common in the Harvard. It is as well that the boys should have something of what competitive means, for the whole of their lives are to be competitive, but it can be excessive. And this is true of both studies and boy games.

Work and play form what may be called the public life of the young men, but there is still the private life of the boy to be considered. The boy is the most revealing creature in the world. He will often look up his

friskier and it may be that one of them is the direct cause of his appearance at the next day. He does not see to, nor does he tackle at the subject of his appearance. I have known of more than one case of a boy making a complaint of illness on the receipt of a letter containing news which had upset him.

And lastly, we have no access of illness, simplicity, lack of thought, incoherence—until a what you will—on the part of the boy. The pretensions of such illness is only possible when in possession of a really comprehensive knowledge of the life a boy leads at any of these establishments.

I have not attempted to discuss the most obvious causes of illness but have mainly attempted to put forward the less obvious. The question I have attempted to discuss is, on each and one that may be approached from two many different directions, that I hope I have not conveyed a wrong impression. Much may be regarded as theoretical, perhaps, and surely is a matter of opinion, but the points raised here have been useful in dealing with a good many hundreds of boys of all types.

#### THE MIND OF THE BOY

BY THE REV. CANNON W. H. ALLEN, D.D.

When a medical officer is appointed to a training establishment and finds himself dealing for the first time with boys, he might be excused for feeling that they are a strange race of beings about which he knows little and of which he has much to learn. Perhaps he may learn to converse himself with the sage "The boy is father to the man" but after some years of this work the saying quoted does not ring true and circles round the effort of one who was once concerned to express an opinion that expressed a truth.

Perhaps it must be admitted that on his physical side the boy needs less the gaze, he suffers from much the same diseases, though, also, he is an addition liable to those peculiar infections and epidemics which keep the medical officer, responsible for his health, constantly busy on a revolving valence.

But on his mental or psychic side the boy is very different to the man. In the first place he is only beginning to feel the force of those potent forces emanating from his centering diaphanous glands which are going to mould his fate when he is to be. Then he is also beginning to writhen to the consciousness of sex and all that it means. Moreover these great changes affecting his mentality are occurring at a time when the boy is being asked to absorb all kinds of universal knowledge and experience under the heading of education. Youth is thus a time of storm and stress and in other ways too removed from an effortless and happy burgeoning into manhood. Yet this is the time when the understanding parent may come to tell his offspring: "Your school days are the happiest days of your life."



If the young were encouraged enough to believe such attempts are *worth* the effort, some chance for those early attempts which are repeated at one time or time. A child might say: "If this is the best that life has to offer . . . I've had enough."

Infantile life provides some very disturbing positive reactions, and indeed it may be questioned if *their* life can provide these again. Take the numerous dream-like moments when one has to submit to the willfulness of school or, regardless of "What a year came!", if perchance one is compelled to reply "Honor Robert Hays", or "What a year father's deception!" if it happens one has not chosen one's parents well. Or again, it is possible, not worse to be labelled a snail at school than to be treated of some snail upon serious crime as an adult? Early life is lived with those childish delusions of the transience of which many later say misapprehensions about were those made.

I have mentioned words among the young. One can, a few years from time to time, through it, even be reminded that they are more often in the nature of a threat than a real attempt. It is nearly always easier to the notion that of boy who wants discipline and a frequently long on, an effort to get out of the house. Most of these cases are characterized by the fact that the boy has talked about his intentions in his conversation to possibly to his mother, and when this, or one can fairly safely assume that no serious attempt will be made. Nevertheless the threat alone places an aim on these intentions for the boy's safety and all sorts of parents and sympathies, encouragement. It is often very perplexing to decide what course to recommend in these cases of attempted suicide. As a rule it becomes a question of either a warning or discharge—warning no longer required, but one has to be careful not to open the door of one's own life to a boy who is possibly only temporarily "let up," but who knows that a mild but acute his threat with a case. Made well before his object. Perchance, by a warning is probably the best time to adopt when there are reasonable grounds for supposing that the attempt was only a "let-up." Corporal punishment is either out of fashion except in those cases, who submit to discipline and decency. Doubtless it was shown in the past, but the prohibition appears to have wrong too for the other way. Punishment—short, sharp and painful—is more healthy, and I say, more acceptable to the young than those substitutes which are slow and boring.

"Warning away" is another expression of "let up" but it means, in a more subtle and bookish type of boy that the attempted suicide. It is apt to mean some other action, from a spell of love. It may be just an expression of home sickness to a boy of little self control. But when a boy who has earned a good reputation plays this trick, it is well to remember the saying, "character is power," and if you are sympathetic you may find that the lad has fallen into a self-love which we have not been the, personal and to return to its object.

A medical officer dealing with boys must not leave that he permits to

not indeed often asked why what they had wrong with themselves. If a young man is "in the rag," and is experiencing an unpleasant interview with the Commander on the morning, he may not feel particularly happy but he does not feel physically ill. Yet under the same circumstances a boy may be really ill though he does not attribute his malaise to the particular "ward of Democles" which is knocking over his jostled head. Day after day these men make a complaint to a boy. Of course, most of these worries are of their own making, but I will give an example of another kind. For the first month or so after joining the Quakers, a boy who I will call Hill was constantly coming out in a fresh case with vague complaints. I did not think he was making any, but on the other hand I could find nothing to account for his complaints. One day I said to him, "Look here, Hill, are you home sick?" He looked me straight in the eyes and replied, "I've nothing to be home sick about. As this reply was rather unusual and obviously had something behind it, I inquired further. "I ran away from home," he said, "my mother is dead and my father did not love me well. I said that I was sorry about that, but now he was in the Navy and was well used he should try and forget his unhappy home affairs. Hence, "Oh, well that, sir, I know. I'm all right, but I am wondering how my two younger brothers are getting on—I want to be able to look after them a bit." I felt very, very much struck that I had even thought of making games of a case of this boy's complaints, but I told him I would have a talk with the Captain about him and that we would get the police and possibly the Society for the Prevention of Cruelty to Children to keep an eye on his home. We found that the father had been rather shaken up by the boy running away and was treating his family much better. As soon as this was passed on to Hill he went about his business and I was hide of him on the future except when he looks his nose playing Ragner or his thumb at boxing. He passed through his training in very quick time and I was sure he will always be a credit to any ship he may serve in. Many doctors in a fairly frequent cause of worry to boys, but most of the worries which are sufficient to cause the feeling of malaise to which I have referred are more concerned with the little world in which they live and are often due to some delight or other. For that reason I need to find it useful to have the detection and punishment laid on my desk when worry first comes in order not to over anything which might have a bearing on doubtful cases. If one has an idea that a boy is trying to hide something, or rather that he is trying to get something by the back door, I find it useful the best chance to make a frontal attack, for in some ways boys are quite truthful. For instance, if one asks a boy—"Do you want to get out of the barracks?" he will always admit it directly whereas a man would attempt to argue and probably say, "No, sir," but I shouldn't like to slip up taking so a signal with one eye as they say, "supposing he has been complaining of defective vision." Perhaps a boy looks on or more or the doubtful line of the officer than does the man.

[illegible]

Buy's habit may come along a parallel for the manufacturing sector. They do the strongest thought of mine. On one occasion, a boy walked into the back Bay on 21 N. St. Vincent and on to his work and without apparently he proved his words. In the usual way, no fewer than a dozen data stores. On a subsequent occasion at Shirley I was asked to see a case of suspected appendicitis. The boy had abdominal pain and some tenderness on the right side lower together with some intestinal cramping. I asked him if he had anything to eat except the ration and he admitted to having had two poundings of monkey nuts. This seemed sufficient enough but somehow my mind turned to their stores, and I said to him, "Did you eat the shells?" Rather shamelessly he replied, "Yes." We did not operate. I thought that perhaps the bloody shells were what he ate, a bad time as they scratched their way on inside.

Then there are the silly beliefs which are true in bits of pseudo-  
scintology. A misbehaviourer sent a boy to me because he was blotting paper  
in class. I found he was five or six later. The physical methods of treat-  
ing these cases which are used on young children, such as peering the neck  
with sticks, are at good with a boy of 15—a very little on wrists to the  
elbow. They are more successfully treated by mental methods. I asked  
him why he was blotting paper because he was hungry or because he was  
in. Of course he denied either and asked he did not know why he did it.  
I said, "No, but I will tell you why you do it. It is because you are  
not, everything you want in your work, and every time you blot blotting  
paper or blot your work a minute, in writing, I want to see your invention.

Please as I am not paying any attention whatever to what you are saying. I met him early and told him that I was sure his instructors would understand any signals he made to them. He was not an unattractive boy and soon got over his inhib.

I hope that some of the things I have mentioned go to support my contention that the boy is not a factor to the man in many of his people's affairs, but let me ask the question, "Would a man voluntarily undergo an abdominal operation in order to gain some livelihood?" Anyhow many a boy would. We always used to give these men such leave as liberty after an operation for appendicitis, and the symptoms of the disease were terribly common. One day a Irish brook sailing heard a Irish man talking to another while waiting to see the doctor. "What's wrong with you?" asked one boy. The other replied, "My ship is just going on three weeks, however he had appendicitis and I don't see why I shouldn't have some leave too." We stopped giving these men leave and substituted light duty in the *British Columbia*, with *dramatic* scenes in the reduction in the number of men exhibiting pain in the right flank loins! In the *Warrent Ward*, Mr. Hildebrandt remained in one when going over a quarterly neurological return. We seem to have quite got over that "epidemic appendicitis" now, so!

There is not much scope amongst boys for real psycho-analysis. They are more prone to suppress food than complexes. When photos, which used to be the big boys of swimming instruction, is now quite uncommon—probably owing to the fact that bathing has become such a popular pastime amongst all classes of late years, but now such men was found to be due to the fact that a boy had seen no other brother drowned.

Hysteria in its many manifestations is by no means uncommon amongst boys. It occurs in the dark-haired Celtic type of boy—one who does not express his reactions in a physical way, and who is not prone to displaying an outward display of spirit—introverts in fact. One such case, noting under the stress of a new movement, having come from the south of Ireland to the Forest developed a widespread epidemic. When he could be got to spend a day in the Forest whisper. We found that he had been used to accompanying his father who was a fisherman and who owned a motor boat. One dark night, when the boy was steering, he ran the boat into another much larger vessel. The episode was still very clearly fixed in the boy's mind, and the apparent shock he had given at the last moment when he realised that a collision was imminent seemed to have centred his hysteria on his boat.

It may be surprising to many that boys still run away to sea. The Merchant Service gets most of them, as the preliminary necessary to joining the Navy are a deterrent to such action. But we get quite a few boys who have, as it were, run away with their parents' consent. These boys strive for an active life and hate school work and general employment. It is a pity that modern conditions are making it extremely difficult for such boys to find a suitable outlet for their adventurous dispositions.

I first came across this type of boy in a curious way. A boy I will call Wingfield came sick, with an injury to his right index finger caused by a faller when he was in the rifle range. He tried to make out it was no accident, but sketched some conversation by the Captain revealed the fact that the boy had deliberately tried to shoot off one of his fingers. I had him under treatment for a little while and managed to get his sympathy. He said he had done it to get out of the Service—he hated school and had joined the Navy to get some "stink snoots, and so things." To his intense chagrin he found that in a Training Establishment he was almost back at school again and he couldn't stand it. The Captain was inclined to get rid of the boy, but when I hinted to him that Wingfield would in my opinion be a very useful hand as an emergency rank in "any school's case," he altered his ideas and decided to keep the boy. I am glad to say that he made good.

It is a mistake to imagine that the ordinary boy has, but for daring and endurance. Perhaps these qualities are not so abundant as is supposed as to make gainsay, but few days pass in a Training Establishment where "man taken" do not occur. For instance, a trainee a good deal of pluck to look the boss of the squad down when the Commander of the Establishment and another officer are having a game and there, to make the job really complete, throw away the key! This key's value was, moreover, well insured with the value of discretion, for he did not want to enjoy the very considerable ransom which his action commanded. This seems almost a pity, because after much running, the master key was produced, but would not open the door and had to be replaced by a carpenter and tools! One can only hope that the subject was watching from a safe distance, but in any case he was never detected!

These wonderful "daggers" of which the sailor is a good master all have their counterpart in a Training Establishment, so that I think they are acquired there. This, when it comes to getting something for nothing or carrying on unpleasant duty, the average boy has nothing to learn. Often enough there still is no set date as much as to give the "something" or avoid the duty, so as to be able to look about it afterwards to their less advantageous advantage.

Some of the odder cases one comes across amongst boys are those of gaudy timidity or shyness which tend to produce because unbalanced characteristics. I remember one such case in a boy nearly boy who had definite brain development and also the broad type of human type. Mentally he was absolutely unbroken, and as he was something of a hothead, he could look after himself quite well. But it soon became evident that the Navy—with its constant stepping and exposure—was no place for him, so he had to be crowded with hypochondriacism. I asked him when he proposed doing and he replied, "I am going to join the Merchant Service!" Most cases are not quite so unbalanced as this boy. Their defect was a great trial to them, and they are not suitable for Naval life, or even doing a job that they do for them.

For the last few years we have been collecting boys who were born during the War. I have typed several thousands of them from the statement forms of their mothers and I do not believe that they show any signposts of the unhappy days during which they were then entry into the world. Now on the mental side as I think they show any deterioration as compared with previous generations. But I understand that these symptoms are not shared by schoolmasters and others who are dealing with the public school class of boys. For I believe there is a consensus of opinion that these boys are not quite up to the standard. Although the working class mothers shared equally with the middle class mother the deprivations and anxieties of the War, it is possible that the more physically occupied at menial or unskilled work, and hence did not react so seriously to the mental strains to which she was subjected. I think we would anticipate that any results of the War on the mother would be mental rather than physical, for after all food deprivation never reached a very serious point in any class of the community.

I apologise for the desultory method of this article. I might have collected boys from a mental aspect in various ways, and such children, boys or people, are becoming innumerable and will have a big bearing on the outcome of the future. But I have endeavored to show how different the boy is to the man in some ways, and to indicate how fascinating contact with him may be, once one is able to get to the root of his emotions and troubles.

### SOME POINTS IN THE TREATMENT OF EMPTINESS<sup>1</sup>

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This paper is not intended to cover the whole subject of the treatment of empty psychosis. A book would require a monograph to itself but only wishes to bring forward on its chosen certain aspects of the treatment which are felt to be most interestingly stressed in current thinking.

Three aspects of treatment will be discussed here: (1) the duration as to the correct time for dosage; (2) the method of dosage to be employed; (3) when to stop dosage at the start. In these three matters we discuss all the important and usually neglected major points of treatment.

It is to be understood that most of the views expressed here are completely personal, and it is fully realised that others may have quite different views on many of the points raised. However, they are the result of much hard work and meditation in an attempt to grasp a clear idea of the real fundamental principles involved, and in every possible controversial point definite arguments will be put forward for the statements made.

<sup>1</sup> Extracted from the *St. George's Hospital Gazette* by kind permission.

## THE VALUE OF A NEW TYPE OF DRAINAGE OF THE CHEST

The importance of selecting the correct method for draining a pyothorax has only been fully realised during the last twelve to fifteen years, and even now the necessity for avoiding too early drainage by an incision unnecessarily well managed or repeated. It is not intended to go into the whole argument for the avoidance of the early drainage, but that I would recommend perusal of the writings of R. A. Graham, and of Cameron and Dennis's well known paper [1]. The new familiar descriptive terms of "pyo-pneumonia" and "post-pneumonic" empyemas were first suggested in the latter paper, and are unconsciously descriptive.

The post-pneumonic type of empyema is easy to appreciate. Typically, it follows a later pneumonia of pneumococcal origin, and everyone is thoroughly familiar with the suppression of pyrexia after the onset of the failure of complete subsidence of fever and gradual assumption of the evening or night type of temperature. The fever is associated with general signs of sepsis, dyspnoea and local signs of fluid in the pleura. Aspiration usually (although not always) yields thick, creamy, fully formed pus. The chest then warms like water or steam and if allowed to stand overnight in a suitable position a negligible amount of clear serum fluid shows the thick pus. If the amount of such a chest could be aspirated it would be found to contain a localized collection of thin well formed pus, shut off from the rest of the pleura by adhesions. In short, one would be aspirating a well formed pleura containing locatable pus.

The correct treatment of such a condition should make but little difference to one's ideas on one of the oldest principles of surgery, namely, the evacuation of the pus by adequate drainage. No one will be found to dispute about the necessity for drainage, great differences of opinion exist, however, about the mode of drainage and numerous other points of treatment. These will be dealt with in the two later portions of the paper.

The mortality of the post-pneumonic type is, with even moderate skill in treatment, usually fairly low, chiefly owing to the fact that by the time it manifests itself the patient has recovered from the pneumonia or other infective process from which he was suffering, and has developed a considerable degree of tolerance or immunity to the infection. The mode of attack is, however, quite different in the pyo-pneumonic type of infection, in which the mortality is almost always high even with the most skilled treatment, and indeed depending on the severity of various symptoms, it may reach very high figures indeed.

It is essential to have a clear understanding of the pathology of this condition. To begin with, it is advisable to keep in mind the description of a fully-formed empyema as given above—that is, a collection of pus in a well shut off pleural cavity. If this definition of an empyema is kept well in the front of the mind of the delineator and he keeps away the term "suppurative thorax" should not, in fact, be used for any other

condition. It is a fact often applied loosely to what is, in effect, a diffuse suppuration of pleurae, and from this mistake one of the true uses many of the remedies that we make. For such a condition the term "pythorax" has been recommended, and can be applied with advantage. To some it may even suggest an adequate instance of the term "empyema," but for clarity in teaching one may be forgiven for being dogmatic.

This type of pleural infection is most commonly seen in children. This is almost certainly due to the richness of the infection being greater at this time of life. Before the age of 5 and to a lesser extent up to the age of 4, respiratory infections are liable to assume an extremely virulent type, particularly following such conditions as measles. It is still the same type of virulent respiratory infection more commonly seen apart from the serious epidemics usually associated with "influenza" infection. The history is in most cases quite typical: the patient has been ill for two or three days with a high temperature and severe general constitutional disturbances, and when admitted to hospital is extremely ill and greatly dyspnoeic. Examination of the chest reveals the signs of a large fluid collection in the pleura, and aspiration yields a fluid which is either definitely rusty or purulent in character. Unless the full significance of this is well understood, the usual reaction, especially in the first rush of enthusiasm of "cutting it," is to jump to the conclusion that the cause of the patient's illness has been ailed that he is suffering from an empyema, which is causing gross dyspnoea and severe constitutional disturbances, and immediate drainage is necessary. If drainage is instigated on such a case, especially open drainage, the result is almost inevitable. Immediately the pleura is opened the patient's distress subsides and death may occur on the table, on the way back to the ward, or within a few hours. Some few do survive, and their condition will be discussed later. When one is acquainted with the true state of affairs present and realizes the enormous too early operation with a safety some truly available. It is as is remembered however, that only a few years ago the full significance of the condition was not realized, and it was by no means fully appreciated. It was he asked "Why not a closed drainage by means of an intercostal catheter at this stage?" This will be discussed later.

The fundamental fact to be grasped in such a case is that the pleural infection is not the cause of the patient's illness; it is merely an incident in the course of what is often an almost overwhelming general infection. The patient is ill because he has a septicaemia, peritonitis, pneumonia, perhaps with lung abscess or any other major infection locus. From the point of view of the pleural infection, the most important thing is the underlying pneumonia, and the fatal result of opening the pleura is usually due to the additional demand on a respiratory mechanism which has almost certainly only a small margin of safety left as a result of the pneumonia. I need do no better than quote from Dr. Cameron's article in the current number ("Empyema or Parapneumonic Infection") of the *Lancet*, in



which he refers to his earlier article. He analyzes 116 two cases of sepsis in children under the age of two —

"Of the 116 cases which occurred 115 were in the septicæmia pneumoniae, only one was typh-pneumonia. Of 116 cases which died, no statement could be made as to how, but of the remaining 31 all were typh-pneumonia. All cases in this group were able to show, that they showed, in greater or lesser degree, such symptoms as high temperature, rapid pulse, urgent and distressed breathing, cyanosis, delirium, convulsions or paralytic-like states. In this series, all these prominent meta-pneumoniae cases recovered, all the others, were one dead. In the fatal typh-pneumoniae case death was generally to be explained by the presence of intense pneumonia or below infection in some other situation. In 116 cases out of 114 there was extensive pneumonia reported at the autopsy. Two had suppurative pneumoniae and had pneumococcal meningitis, one pneumococcal pneumoniae.

There are various changes which enable one to measure the current state for drainage. First for convenience in description there is the character of the separated fluid. In the earliest stages it is clear or very faintly turbid, slightly more colored or even tinged with blood, then there develops usually this opaqueness. If left in a test tube over night, there sediment out a very small amount of cellular material, either red cells or leucocytes. As each day passes the separated fluid becomes turbid and then definitely pusulent. If left in sediment it will be found that the proportions of sedimented pus and supernatant clear fluid gradually change, the deposit slowly increases in amount, and the more layers of sediment will build the stage is reached when over 50 per cent. of the separated material sediment as pus and only 50 per cent. or less of clear fluid remains above it. The condition at this time seems to be no longer thin and watery like water, but is thick and pours with difficulty — in some cases it is even possible to invert the beehive and not to lose any. The time taken for this change in the character of the fluid is about 2 or at least two to three weeks. By the time it has the character of firm almost pure pus the pneumoniae process will almost certainly have subsided, and when one originally a diffuse collection of pus, one of the above will have localized as a well-shut-off abscess cavity. In other words, a new localized suppuration will be established. By this time also, when great cellular masses elsewhere in the body will be either resolved or past their maximum activity, a considerable degree of immunity will have developed, and altogether the patient will be much better able to withstand proper drainage of the pleura.

During this period of maturing while separation alone is being carried out, the patient may become even more ill and death may appear imminent. As such times considerable pressure may be put upon the surgeon to drain the chest, and it is often exceedingly difficult to resist the urge to operate. Drainage in such a case, however, is not at all little more good than frequent aspiration is doing. If the patient is dying, he is dying from the pneumoniae or suppuration, or some other major infective lesion. I again quote from

Dr. Cameron: "An empyema was not only in the operation, from the nature of the case, of an abscess, but it may even precede the absence of recovery, already all too slender." In our series of the thirty-nine cases of empyema, empyema, empyema were located during life, and as the same time thought it to undergo the radical operation. Eighteen died, nine within twenty-four hours of the operation, no more than occurred.

In addition to the character of the fluid separated, several other points are of great value. First, there is the duration of the illness, no empyema is rarely fully formed and ready for external drainage before the third week of the illness. If the patient has been ill only a few days or a week and is presented to one as a very ill person requiring immediate drainage of an empyema, then empyema should be at once assumed. Second, there is the



FIG. 1.—Fluid in the pleural cavity, showing the process of sedimentation over time.

temperature chart. When the patient is ill, the temperature is high, fever, moderate, but not falling below say 101° F.—very often in late stages, ranging from 107° to 109° F. When the empyema has subsided, and a localized abscess, remains in the pleura, the temperature, particularly of the characteristic swinging type of retained pus, often rising from a figure near normal to 102° F. to 103° F. Moreover, and this is of great importance, if the fluid separated from the chest is the real cause of the patient's illness, then separation of an adequate quantity of it will lead to a temporary remission of temperature. For instance, the temperatures may have been ranging up to 107° F. every evening, after separation of 100 c.c. of pus it may fall to only 99° F. that evening. On the other hand, if an entire empyema process still exists, separation of fluid makes no difference in the temperature chart, no fall in temperature follows its removal. This is a very simple fact, but one rarely appreciated.

breathless, cyanotic condition it was placed in a position in which it was considered danger of dying is a still further from being in position of oxygen and perhaps carbonic anhydride is being left. Just as you sleep he has been as ill as this, then one starts to get very restless about opening the chest. It is almost certain that there is something else wrong with the patient causing the postural distress, and one is being misled into attributing to the asphyxia the whole of the patient's distress. It is imperative in such cases to proceed very carefully, and then applies even when the final diagnosis from the chest is definitely positive. It will of course, be necessary to drain such a case but certainly not a closed drainage by means of an intercostal catheter is safe. The following cases well illustrate what is meant. —

A child, aged 1 year, was admitted probably ill with a circumferential bronchopneumonia following measles. There were signs of fluid in the left chest and local bronchial breathing was audible on front; oxygen was administered continuously. He had been ill about eight days. A drainage of the chest yielded 100 c.c. of thin fluid which settled out as 75 per cent. pus and gave a growth of *Staphylococcus aureus*. The child was given oxygen continuously for six days by which time it had improved sufficiently to be withdrawn. The chest had been reopened five times, and one week after admission the indurated layer was 75 per cent. of the whole cavity. On the eighth day after admission (about twelve to fourteen days after onset of illness) it was decided that operation was necessary as the child was very distressed. The whole of the left side of the chest was drained about. It was assumed the illness was due to the collection of fluid in the chest. On the following day a small segment of rib was removed and the chest drained. The whole procedure lasted less than five minutes; nevertheless, immediately the pleura was opened the child became very much worse and distress increased. It was placed in an oxygen tank at once, but its condition failed to improve and a few more than three hours later it had expired; it was found that there was a diffuse bronchopneumonia of the whole of the left lung, and at one point a cluster of tiny abscesses adjacent to the pleura had ruptured and given rise to the suppurative pleurisy which was present. There had been some induration of the inferior lobe but, as yet, definite abscesses had neither formed nor allowed the whole lung to collapse. There is little doubt but that the rupture of these superficial abscesses into the pleura caused a more rapid thickening of the part than would have otherwise occurred. Even then one should not have been misled into operating, seeing that the total duration of the illness was but little over two weeks and only two days before the patient had been as ill as to need continuous oxygen.

A patient who has an asphyxial and an asphyxial chest, unless it is a large ruptured one, and he is already had very low from a preceding severe illness, is usually poorly ill, and there is usually some general need to operate. I do not wish to be misunderstood as this where put is present

it should, of course, be evacuated as early as possible, and it is not suggested that unnecessary delay should occur. On the other hand, it should be clearly appreciated that the need is not early surgery. It may be desirable



FIG. 2. Isolated pocket of empyema, as seen on exploration.

to operate the same day that pus is found, but it is not essential to do so, as empyema is never an emergency. One stresses this because an atmosphere of urgency may be created unnecessarily in a patient who is poorly ill,

and it may be felt that immediate operation should be performed. It is in such cases that one has to be very hesitant, a delay of two or three days even will almost certainly make the task different in most cases of pure



Fig. 1. Anteroposterior view of chest and spine.

empyema. It may be, of course, if repeated ribs are at hand, should decide as to whether immediate drainage of the chest is needed, then it is far better to postpone. No possible harm can come from this, but by making up to operate too soon the balance may just be turned against the patient.

During this waiting time efficient aspiration or drainage by an intercostal catheter in a closed space should be carried out:

At a recent higher surgical association an extensive experience in a candidate has enabled us to fill the gaps of our early ignorance for empyema. He stated dogmatically, as he considered opinion, that there was never need to delay operation. One and only reason that as a surgeon he has had his cases of empyema treated up to him by a physician fully ripe for operation. It is conceivable that he should have watched the course of the illness in a small child with a severe suppurative infection with an accompanying persistent pleural effusion and gone away with the idea that it must need his hands when operation was performed. The management of such a case and the situation of the very best moment to operate requires as great a degree of skill as in any other major condition in surgery, and is not met by the old fashioned disease and operation as necessary as right.

The process of aspiration of the chest needs little consideration. It is a good plan, whenever fluid is removed from the chest, to replace it with some sort of the same size. No more than five fifths of the volume of fluid removed should be replaced by air and often much less than this is sufficient. Apart from enabling one to remove greater quantities of fluid without causing symptoms of distress to the patient, the presence of the air often gives valuable information.

There is some from figs. 2, 3 and 4 that the fluid level formed after air replaces and tells one at once the size and limits of the cavity with which one has to deal. It is to be noted that the air may before the introduction of a syringe or each other of the same size of the cavity.

In most straightforward cases of empyema no radical intervention will be given by the conservative but every now and again it will prove to be of great value, and should be employed as a routine. In fact, it may well be stated as a general rule that whenever fluid is removed from the chest some fluid should be put back in its place. An instance of how valuable this step given is shown by the following case—

After an abdominal operation a patient developed persistent infection, and later showed signs of the left lung. A needle was inserted through the seventh intercostal space and drew off pus. Without further consideration a unilateral incision was thrust through the space and immediate drainage instituted. At the post-operative examination two or three days later it was found that the infection was a subphrenic abscess and had passed through a ruptured pleural defect perforating the diaphragm. The mistake was made here of rushing into drainage on the first signs of finding pus without waiting to analyze the infection properly. No ray examination of the chest had been made and it may be stated somewhat dogmatically that only under the strict of circumstances should any operation of any sort be performed on the chest without a recent x-ray examination. If as the case depending of pus had been followed by an exploration and then a ray examination the true nature of the condition would have been at once apparent.

When fluid has been removed from the chest, it should be put in a bag away, but a sample should always be kept in a two-ounce jar, close to the patient's head. It is unobtainable with what most people think is the same reply. It occurred when one demands to see, explained that it has cleared from the chest, and on occasion, especially in the children, the



Fig. 4. — Effect of temperature on the rate of polymerization. Polymerization temperature, 40°C.

got a broken lamp in some hole or corner instead. If a specimen is always left where the field is, a routine, just as a second specimen in field, it would be much more satisfactory. From the point of view of the survey it is, of course, essential that he use the exact nature of the field for the purpose of which he has been asked to operate. Unfortunately, it is very uncommon for a surveyor to demand that before operating, and if he makes a mistake of some kind or direction will be bound to follow one of

It can be said that one can design another character of the fluid in the aspiration, which should be the final object of the operation. This may be unnecessary, but in reality the true nature of the fluid can often only be appreciated after it has been allowed to stand in a test-tube overnight.

When aspiration is being carried out regularly during the formative stage of the empyema it is again assumed that a complete empty aspiration should be kept and isolated. If these tubes are put in a rack above the bed one can read the progress of the case at a glance. A characteristic expression of tubes is shown in fig. 1.

A word as to the frequency with which aspiration should be carried out during the formative stage while the patient is still greatly ill from pneumonia. Many people tap the chest just as often as seems necessary from discomfort or inspiration occurring as a result of accumulation of fluid. This may mean once a day or even every two or three days. It can be shown that the rate of absorption of fluid from the chest is hindered from the pleura is greatly increased both by increased volume of fluid in the pleural cavity and by deep respiration. If one waits for the chest to fill up, the pneumothorax is to be displaced, and the dyspnoea directly caused from the pneumonia to be exacerbated, then one is offering a chance of the acute fluid to occur at an alarmingly rapid rate. It would appear, therefore, that aspiration should be performed much more frequently, at least twice a day would not be too often when the patient is very ill and fluid is forming freely. If the measures suggested by Mr. Fisher Edwards are employed, this can be done easily without the difficulties associated with frequent aspirations with local anæsthesia and without a troublesome collection of the chest wall developing. When the fluid eventually is gone, for the initial aspiration a short incision is made down to the intercostal muscles and the chest wound packed open, subsequent aspirations can then be carried out much more easily and without undue disturbance of the patient.

To recapitulate the points which should influence the decision as to performing or delaying aspiration:—

- (1) The age of the patient. The spontaneous response is much commoner in children, particularly under the age of 2. Special care is needed in these cases.
- (2) The preceding history. An attack of measles or whooping cough, or diphtheria during an influenza epidemic.
- (3) The duration of the illness. Nearer is the first week, but surely in the second week, and usually not until the third week as it rule is done.
- (4) The general condition of the patient. In aspiration when the condition is grave, or has been serious during the last few days.
- (5) The composition of the fluid. Temperature should be of the swinging type, to be modified by aspiration of an adequate quantity of fluid.
- (6) The character of the aspirated fluid. It should be thick and not watery, after settling out in a test-tube at least 80 per cent. should be sediment.



## THE MEANS OF DRAINAGE OF THE CLEFT.

It is on this aspect of the treatment of empyema that so much difference of opinion exists—much of it one must think comes from our understanding of the actual principles involved. We find an examination that there are two parts of the subject to consider: (1) The type, chiefly the size, of the drainage hole to be made in the chest, (2) Whether a 'closed' or 'open' method should be used.

In the first place, simple aspiration must be considered. There is no question that empyema thoracis can frequently be cured by aspiration, especially if aided by an explantment. There is abundant evidence of this in the literature, and as in almost every aspect of empyema, many of the articles are really put forward the method as a new and original treatment introduced by the particular author. The closed every method in use, it has quite a long history. The American Hygienic Commission of 1941 and 1942 was aware of these 1939 cases found that 46 per cent. were cured by aspiration alone. Two cases have been recently treated by aspiration alone with success and were both excellent and were both made satisfactory collections. Doubtless the compressive force of the lung on each side of the cavity aided in the obliteration of the cavity in both these cases.

Apart from this trial of various selected cases by aspiration alone, what is the general standard of drainage to be desired? There is no question at all as to the answer, no answer spoken freely by Archibald Lane at that hospital some fifty years ago [5], namely, that adequate drainage which can only be provided by means of a segment of rib. This step is now universally amongst the classical standard procedures of surgery. It is simple, but nevertheless it stands and must always stand, because it is founded on infinitely good surgical principles. The treatment of empyema in a thing of great antiquity; there is positive evidence of it as far back as the times of Hippocrates who writes much on the subject. Throughout the many centuries that have passed mankind has every reasonable method of treatment of empyema has been tried, even Archibald Lane's suggestion of rib resection was originally carried out by Ambrose Pare, in the sixteenth century. As a result of the unsatisfactory results of the former forms of drainage employed throughout all this time, the general efficacy of the principle of rib resection to provide an adequate vent has emerged. One continually hears the question 'But why should rib resection be necessary?' The answer is that Lane's vigorous disapproval of the step was the end of those many centuries of dissatisfaction.

Let those who write and talk and think of so-called 'new' and modern 'high' methods of treatment of empyema pause to consider that none of these methods are new. If they went back no further than the beginning of the last century they would find all these new ideas had been anticipated and tried out many times. It is true that in certain instances the exact arrangement of technique may not have been produced, but no single new principle will have been introduced. Anyone who has studied the question of the

prevent the treatment of empyema until last observe the deliberate tendency on the part of many workers to avoid the step of rib resection and point with pride to their own particular modification of some form of intercostal drainage.

Let it not be thought for one moment that it is being suggested that there is no place for intercostal drainage in the treatment of empyema. It is a method which has undoubtedly led to a complete cure in one known from personal use. In an less selected cases it may be all that is necessary from beginning to end. To make it an ideal to be followed in every case is, however quite different. It is, I think, to see what the operation in the step of rib resection should be. Performed under local or a short gas and oxygen anaesthesia it is an operation of minor severity in suitable hands and does not lead to any unpleasant or undesirable symptoms immediate or remote. The negligible risk of infection of the rib rib is no more than the almost inevitable pneumonia that accompanies a catheter left between two ribs. Intercostal drainage is of value when one is doubtful of a cure or when to retreat at once upon the step of rib resection. This is usually in the later stages of a purulent process when the presence of a purulent effusion is likely to be adding a decided extra burden to the patient's already grave load and yet one is not confident that satisfactory localization has occurred. Or again when the patient has a large perhaps neglected, empyema and is in a very poor general condition, when much wasted and suffering unnecessarily from pain, these aspirations on top of what has probably been a very severe illness. Although in such a case satisfactory localization has occurred a few days of intercostal drainage will give considerable relief of symptoms bring the temperature down, and make considerable improvement in the patient's general poor condition. The outside evacuation of a large collection which follows rib-resection is not altogether desirable, and the preliminary intercostal drainage acts as a means of "decompressing" the chest.

The great disadvantage of the intercostal catheter is that, however carefully one looks after it one is never certain of efficient drainage or sealing glass—and this difficulty recurs in every day cases. After three or four days one decides what the usefulness of the empyema for more adequate drainage should have been noted and a rib can then be resected. In some few cases it may be considered sufficient to continue with the catheter alone, but the experience largely based in the great risk of a chronic empyema or, at any rate an unnecessarily prolonged period of drainage and this risk is a large one compared with the trivial step of rib-resection and the great chance of gain of a speedy recovery.

It may be asked "Why not institute closed drainage by means of an intercostal catheter in an early stage in the formation of the empyema instead of aspirating and waiting?" This one, of course, is done and is fast in doing by many. One feels however that it is not a sound step to take. To begin with, simple repeated is perfectly adequate to deal with

the operation and maintenance of a drainage or cesspool system (especially a J-tube) pulling out the tube and giving himself an open pyelonephritis is very big and constitutes an unnecessary risk. Further, it is unquestionably not safe or desirable to carry a constant degree of acute suppurative pressure on the outside of a drained lung. Support of a weak spot may easily follow. That spots are treated safely and satisfactorily by this means during the febrile stage amply shows that it can be done and 'go away with this' however, not a safe step and for general use should be deprecated. It may tend too much to blur over the necessary aspect that should exist for the early drainage.

The provision of good and adequate drainage at the very first time is by far the most important aspect of the surgical treatment. Secondary in importance is the use various details about the technical side which need brief consideration, so often, however, these secondary features are made to assume a position of first importance to which they are by no means entitled.

The position of the drainage hole is chief in importance of these. For the ordinary basal type of suppuration this should not be made too far forward, else it will be found to give inefficient drainage. The more usually selected one is just in front of the posterior surface line where the muscle layer is less thick and where the tube is out of the way of direct pressure when the patient is lying comfortably back on pillows. On the other hand, we lose an authority, than Taylor Williams prefers a site much farther back on the scapular line, his reason for this being that the paravertebral gutter is the region where the cavity is most slow in closing and he believes that this was should therefore be the one most directly drained. He, moreover, departs from the generally accepted teaching that drainage should be made at the most dependent part of the cavity and prefers to make it considerably higher. He bases this on the argument that as the cavity is progressively obliterated, the discharge port will well come to equal the efficiency of a drainage hole situated low down. If the tube merely passes through the chest wall and does not project any distance into the cavity, there is no doubt that this is a correct reasoning. It does not hold, however, if the tube is allowed to project outside a short distance. Moreover, one feels that the advantages claimed for it are outweighed by the fact that the outside end of cavity below the level of the drainage hole must be continuously drained for some considerable time, even if the discharge does not eventually.

The question of open or closed drainage has not to be considered. Again one finds that many people use one or other method without being at all clear as to the reason for it doing. There is little doubt that very often the use of closed drainage is in the nature of following a fashion, and, as so frequently happens in such a case, the failure is followed literally or slavishly.

Arguments can be brought for and against both sides. Very often

however the use of closed drainage will quickly make a difference itself, even if it is unanimously agreed that closed drainage is desirable in the treatment of emphysema. Such a statement is not only true, but, as that many people do not believe so, but it is also true and convincing.

The arguments brought forward are that it is better to perpetuate the condition already present in the chest and that, if drainage is arranged into a closed system creating a negative pressure, then it will be facilitated, the expansion of the lung will be hastened and to a lesser extent secondary infection of the cavity will be prevented.

It is best to examine each of these points separately. In most of the closed methods any exposed drainage that might result would in any case be required by the inadequate use of the hole plugged. Even when an adequate hole is made, it is difficult to see the reason why the drainage should be necessarily better than that obtained with an open tube. Such a tube properly placed, sealed by gravity and the air is kept supplied by every act of breathing or coughing, provides a perfectly adequate drainage.

With regard to securing the lung to expand more rapidly in the ordinary average emphysematous case operated on at the present time, the lung expands and liberates the cavity as a considerably rigid and satisfactory rule by itself, in children this is particularly well marked. One has an excellent mechanism for providing plenty of "negative pressure" in the ordinary respiratory movements of the chest wall and diaphragm. Even with an open hole in the chest, the act of inspiration produces collapse of the whole lung and diminishes the size of the cavity. This can be readily seen if the cavity is filled with fluid, because with each breath the fluid rises and falls and if a deep breath is taken or a cough is made, then the fluid overflows so as that one readily for some distance. Moreover, it is to be remembered that with a so-called "open tube" where drainage have been carefully applied particularly when they are not, as they should be as a result of the expansion of the cavity, there is no "open pneumothorax," it is an open chest and has been converted into a "closed drainage."

When considering the effect of a negative pressure applied to the emphysematous cavity, the mistake is made of picturing the lung being sucked out by the negative pressure applied in a limited area of the whole surface, of course, in actual fact, the lung expanding force is the general pressure in use that causes such expansion. Moreover, even with expansion there is, in addition, a force following out of that portion of the lung which is not supported when the cavity is. Advantage is taken of this latter fact in the use of Webb's bottles to create lung expansion. The efficiency of this method can be seen by removing the patient when he is blowing bottles or merely holding his nose and blowing upon a device, when the lung may be seen to expand in most cases, even touching the chest wall. In some instances there is a considerable extension of this use of "blow-bottle" in creating expansion of the lung. The argument apparently put forward is

that the patient should be taught respiratory and accessory movements and that the act of expiration against resistance tends to collapse and not to expand the lung. I would point out to the listener a faulty idea of men going to sleep deeply, one must first of all expire deeply and smoothly, then no action has been taken of the lobe in the chest. If the lung was everywhere supported by chest wall then it would be true, but in this case the one portion of the lung which it is desired should expand is unsupported, and when the pressure rises in the chest during expiration the portion must balloon out, and as already mentioned this can be readily observed if happen under the given conditions.

There are only two sets of circumstances when the lung fails to expand fully and easily when simple open drainage is employed. One of them is if a pleuro-bronchial fistula is present, and the other is when one is dealing with lung bound down either by a dense layer of pleura, resulting from gross delay in opening or by fibrous changes in a cord of fibrous in its substance. In both these conditions one would be glad of the assurance that a closed drainage should give an actual pressure in  $\text{cm.}$  of course, impossible when a pleuro-bronchial fistula is present and unless no noticeable difference when the lung is bound down by fibrous tissue. It is true that the lung will slowly expand under such circumstances, but this is no proof that the negative pressure applied in its right surface had any considerable effect. It is the way a deep that counts as can be shown by producing the same expansion when an open drainage is used. Only two cases has one observed the complete failure of "negative pressure" to do any useful service in the case when it was most needed.

Markon was made in the beginning of the paper of the patient who has an opening made into the chest during the early formative stage of an empyema when no fibrinization has occurred, and yet survives the event. The result is an enormous cavity occupying the whole hemithorax with a lung collapsed down against the mediastinum. It is in this case of case that a closed drainage following its insertion is likely to be of most value. The lung is not covered by dense pleura, and a mild negative pressure exerted over its whole surface can only be of value. One needs, however, over the way of closed drainage in this case, not as a means of dragging the lung out from its collapsed state, but as a means of creating the same tension of the greatest expansion which will follow the respiratory movements alone. In such a serious case one must take advantage of every small detail of treatment that can possibly help, and to exclude the benefit to be obtained from closed drainage would be wrong. It is, however, only of very limited supplementary value. If the effect of a constant negative pressure on the points of the lung gives the major part that is desired for it by means of expanding the lung, then it must be admitted in such a case the lung expansion should be rapid and obvious. It is true that, the process of expansion is a very slow one and may never be complete.

Many surgeons claim that they use "closed drainage" and even ascribed

themselves into thinking they do when, in actual fact the method fails. By this is meant that to keep a closed system of drainage under negative pressure functioning properly needs a great deal of constant care and no little skill and experience. Even the staunch supporter of the method freely admits that in a very large percentage of cases it fails after a few days are over, and treatment has to be carried on with an "open" tube. Even if one is using a reliable system, then for ordinary hospital work in the average case the difficulties in the way of achieving and maintaining a constant closed system do not balance the very small advantages to be gained by it. This is again particularly so in children: it is exceedingly difficult to maintain a satisfactory closed system in these cases, and the long experience is always so rapid that nothing is gained by attempting such a difficult task. To open and insert a closed drainage on a case of empyema outside of a hospital, where no constant personal supervision can be carried out, is almost useless.

By far the simplest, best and most easy means of procuring a closed system of drainage is by use of a *Taylor Edwards* tube. For the benefits of those not acquainted with it, it is a wide tube of about half-inch internal diameter with a flange at one end. It is inserted after aseptic technique and the muscles and skin of the chest wall are snugly around it. The flange rests on the parietal pleura and prevents the tube slipping out; suitable adjustable flange on the tube is ground down against the skin and can be tied firmly against the chest wall by tapes so that the tube is held securely in place. A few rollers are incorporated in the tube for rigorous purposes. The tube is then connected to some simple closed system. This is, as already stated, far and away the best means of securing an air tight drain, but how readily one fails it almost! The great drawback that always exists in connection with pieces of apparatus bearing the name of a well-known worker is that they are so frequently used without any care or thought as to the part of the case: they are taken as short cuts to treatment. They are often used in much the same way that one sees electrical belts or finger rings advertised in the newspapers of a certain case for rheumatism. You wear the ring and the ring does the rest. In a *Taylor Edwards* tube is the patient and the tube cures the empyema.

The much criticised open drainage rollers, one fears, from the grave drawback of not looking so up to date and scientific as the other methods described. In actual fact, it is thoroughly sound in principle and probably satisfactory in practice. Its weakness, but the great advantage of simplicity, which at a big point is the management of a condition which is so uncertain in its course as empyema disease. If the points of after care to be described later are carefully followed then the draining and cure of the case can be safely left in its greater part to a relatively unskilled person. With any of the closed methods, constant expert care is needed. Further—and this is again important—the treatment of an empyema should be, wherever possible, ambulatory. For a patient to be tied by a tube to a bottle is a

great hindrance to surgery. With an open tube the patient can usually be got up at an early date, is able to carry out his breathing exercises efficiently, and by his active activities considerably hastens the expansion of the lung.

When the American Army Hygiene Commission did its work in 1913 and 1914, it had opportunities for clinical research which have never been equalled before or since. They were dealing with large numbers (about 3,000 cases were reviewed) of men, all personally healthy young adults afflicted by the same disease (interstitial pneumonia) and placed under the same government (military) hospital. They were able under these conditions, which, it must be admitted, were most exceptionally well controlled for clinical research, to compare the results of every known method, such as those ever suggested in the treatment of empyema. A whole word or group of words could be devoted to one method and one method only. The doctor and nurses visiting these wards would acquire considerable skill in each method, and direct observations and comparisons could be made of the results. As a result of this exceptional opportunity for comparison of all methods, the Hygiene Commission decided that the most satisfactory and generally useful and successful one was drainage by means of an open tube after the preliminary period of aspiration. These observations do not leave the objection that opportunities to make sets of figures about various forms of treatment of empyema. They all pertain to the same epidemic. To compare figures obtained by different forms of treatment used from one year to another is useless. The purely variation in the severity of different epidemics is considerable. In a discussion by the B.M.A. in 1928, it was remarked that at the London Hospital the purely mortality varied from 8 to 45 per cent. (3). No figures are of any value at all if taken over a period of less than five years, i.e., five years for one method and five years for another method. But yet how often does one see papers published in journals of considerable repute which describe a "new method" of treatment based on the results of a handful of cases!

It is hoped that this discussion of the question of open versus closed drainage does not appear ill-timed or too partial. It is meant to be an attempt to examine carefully the fundamental principles on both sides. It is not suggested that closed drainage is wrong or unwise. It is an excellent method of treatment in good hands and there is but little doubt that if it can be used successfully and properly, from the beginning to the end of treatment, it will produce a cure in a slightly shorter time than the open method. Against this possible slight advantage in the period of convalescence is to be reckoned the considerable extra care and attention needed, the absolute failure of the method in a large number of cases, and the dangers of treatment when on the basis of these approaches the principles involved.

#### THE TIME FOR REMOVAL OF THE DRAINAGE TUBE

When speaking of the extra skill and attention needed in the management of closed drainage, let it not be imagined for a moment that consistent

care and after-treatment are not needed in the open method. The question of tuberculous, as merely an obstacle in the treatment of the empyema, and the manner who treats a tub and where near the patient upon may indicate he has treated an empyema successfully, but he certainly has not. If satisfactory healing follows, then the credit is due to the person who managed the case afterwards. The only way in which open drainage compares after care is that most of the dressing and attention can be left to a suitably selected person, providing full responsibility is taken for the drainage and removal of the drainage tube.

The examiner mentioned earlier in this paper also asked a candidate when the tube should be removed from the chest. The answer given was treated with scorn by the examiner, who stated that the tube should be left in until the drainage ceased to be purulent or stopped altogether. This attitude is really lamentable and reflects the loose and unscientific thought that is so widely prevalent in dealing the most important step in management of the case. To discuss the problem so early is to reveal ignorance of matters of which a surgeon should be fully aware. Apart from any other considerations, if a drainage tube is present in a wound then it will never stop discharging, and so how can one wait for drainage to stop? A foreign body lying in an infected wound must result in a constant purulent discharge.

It is essential to consider first of all the natural processes that result in the healing of any abscess, and then in particular that nature spaced here of abscess—a thoracic empyema. If an abscess in the soft parts is walled, the pus escapes the walls fall together, and for a varying period of time there is a fairly profuse discharge of pus. As the inflammation in the walls of the cavity is dealt with by the body, the discharge becomes less in amount and less purulent, and the process of obliteration of the cavity proceeds rapidly by adhesion of the walls and their healing together by means of granulation tissue. Finally the cavity is completely obliterated, the skin heals over the surface of the wound and the process is finished. Now no one will disagree with the statement that such an abscess is not healed until the cavity has been obliterated and the skin healed over it. If the skin heals and leaves a small pocket underneath, then the condition is not cured. It is not until a thorough collection may or may be absorbed and the small cavity obliterated, but, unless, and until, then happens a remission of the symptoms is always likely. The selection of the exact time of removal of the drainage tube from such an abscess is usually rather in the nature of a shrewd guess based upon experience, and roughly when the amount of drainage has lessened so considerably and the local and general signs of inflammation have subsided that one feels confident that the abscess will continue to heal progressively and ultimately itself without any retention of pus. Occasionally one sees on the side of the early removal of the tube, the drainage hole becomes contracted quickly, the abscess no longer and the hole has to be enlarged once more and the tube put back.



for a time. In general, however, healing occurs quickly and satisfactorily unless something exists to prevent it, such as a foreign body, a sequestrum, or the walls of the cavity are so rigid that they are unable to collapse together.

An abscess is but little different from this. When the cavity is adequately drained pus is evacuated and, with the relief of pressure, the walls begin to come together, i. e., the lung expands. The discharge from the large area of infected pleura continues but gradually lessens as the nature subsides and the cavity is progressively diminished in volume. The cavity heals and obliteration starts by a gradual adhesion of lung to chest wall around the periphery of the cavity, and a wrapping up of the process subsequently until the cavity is completely obliterated. If the tube, which should have been left in until this has happened, is now removed, there remains nothing but the scars which leading from the old, now non-existent, pleura to be obliterated, and this quickly occurs. The adhesion of the lung to the chest wall is by a process of granulation and so must clearly take at the very least, ten to fifteen days.

Now, in the "soft part" almost there is a considerable margin of error on the time of removal of the tube. The walls tend to fall together so rapidly and freely that with anything like a reasonable look-out for the pus, healing is bound to occur satisfactorily. In the case of the abscess there is not nearly such a wide margin of error. If the tube is taken out too soon, i. e., before the cavity is obliterated, then several things may happen. First, the process of healing may proceed unchecked and progressive obliteration of the cavity occur until a complete and lasting cure follows. This unfortunately, and perhaps fortunately, happens in the great number of cases. Second, obliteration proceeds up to a point and then the drainage hole contracting down more quickly than the larger cavity does, drainage becomes inadequate and discharge is increased back once more.

Again, several things can happen. First, with the cessation of pus all the local and general signs may return and further operation becomes necessary. Second, the condition of "chronic suppuration" results, the small cavity leads into a cavity in the chest of varying size, which is more or less always partly full of pus, its walls becoming more and more densely fibrous and rigid in time passed. Very often subsequent healing occurs, a fibrous web forms over the opening, the patient is dry for a short time, and then a fresh discharge of pus occurs. Third, the chest may heal over completely and form a firm case and the patient be discharged from hospital apparently cured. Nevertheless, lying in the pleura is a collection of pus, a well lined-in cavity. It is possible that this may be absorbed by the body in even considerable, coughed up with complete cure. Most often, however, it is only a matter of time before such residual collections make themselves known. It may be months or years (it is usually years), but sooner or later the patient develops a pyothoracic condition with pus in the chest and cough and is bound to have another suppuration. Very often when

then I cannot point to cases very chronic, the shortening of the period when it is so much more than that of the ventral pleura that it is easier for the gas to pass into the lung, and rupture may a number of times occur. There can be no grave danger of being suffocated as long as there is no inflammation. The importance of these overlooked untreated emphysemata has hardly been stressed enough. Such a condition should always be carefully watched, particularly if there has been a history of pneumonia or operation for emphysema. I have seen cases persist themselves with symptoms after the condition has been treated for varying periods of time ranging from months to many years. The best instance was a man who had left a hand emphysema in 1912 which was treated by rib-resection and drainage. After the tube was removed the site healed and he left hospital apparently cured. He served throughout the whole of the Great War, complaining only of a slight non-productive cough and occasional dyspnoea. I saw him in 1941, sixteen years after the original operation. He had developed a productive cough with fever and general ill health. This had been going on for nearly ten years, with intermissions. On looking at the chest a distinct bulge could be seen in the lower mid-lung region on the left side, this was not due to a swelling of the soft parts but to actual distension of the ribs apparently due to unrelieved emphysema. On entry examination a large emphysematous emphysema showing a fluid level was seen. His chemistry was unaltered, and was amply proven by the gross enlargement that had occurred on its walls and by the remarkable adipose distension of the overlying ribs. This is, of course, an extreme example, but it shows conclusively that it is possible for a patient to continue with his ordinary occupation and to be an apparently satisfactory healthy, and yet to have an unperceived collection of gas. This point it is by no means sufficiently appreciated but just as of great importance in approaching the criteria of cure of an emphysema.

Now, as the majority of cases the time of removal of the tube is, as in the case of the soft-part abscess, nothing more than a guess. In many cases perhaps a very good guess, but nevertheless a guess. The clinicians quoted above would probably not admit it, but it is so. It may be content to take the tube out at what seems perhaps a propitious moment and rely on the natural expanding power of the lung to continue the obliteration of the cavity that still exists. There can be, of course, perfectly justified to take the risk. It may be said: 'Yes, but I always make very sure and leave the tube in a long time until I feel certain an empty cavity.' Even then one cannot be certain—it is still a guess. In the great majority of cases an emphysematous cavity is a relatively short time and if the tube is left in for what is considered a safe period, it doubtless covers the healing time of most, but it is after all the case a little different from the average that one looks to give trouble and unless one takes precautions to deal with these effectively and wisely, then one's treatment can never reach a high standard. In many cases, also, such a policy results in the patient having the tube in for an unnecessarily long time. A few days too long does no harm and is, perhaps

a side step, but two weeks or so too long is unnecessary and careless. Clearly, there must be an approximately exact time for removal and some effort should be made to assess this.

One's estimate of the correct time to remove the tube should be when a cavity can no longer be demonstrated to exist. Such a criterion is the only side one for the absolute ease of an eegraph, and if a surgeon is conscientious in his treatment and anxious not to have "disasters" of recurrent suppuration, then he should accept this as a truism.

There is only one simple, safe and certain way of determining the satisfactory obliteration of the cavity, and that is by maintaining it. Gossage, probing, or trying an ill equally efficacious. A probe is dangerous and misleading, as a ray can be totally misleading and fail to show a ray, a large cavity if it is empty and posteriorly situated. I can see no reasonable objection to measuring the volume of the cavity. The only possible hindrance can be the presence of a 15 ml. plastic bottle, and if one is present then one should automatically keep the tube in.

The measurements can begin at any time during the first day or two after operation. The procedure is quite simple: the patient is first placed on his side in such a position that the drainage tube is at the highest point of the cavity—this usually means removal of all pillows except one under the head (not shoulders), and perhaps insertion of a pillow under the pelvis. The tube is then removed and water taken to fill it: a solution allowed to fill gradually into the cavity from a graduated cylinder (eg. 20 cc.). If the patient is breathing reasonably quietly and does not cough, a very exact measurement of the volume of the cavity is obtained. The patient can then be turned over so that most of the fluid runs out into a dish, the tube is reinserted and dressings applied. The whole procedure only takes minutes or two in the ordinary dressing.

The measurements can be repeated at convenient intervals (e.g. every other day to begin with and then less frequently). The readings should be started as put in the new report. Apart from the practical value of this method as treatment, the findings are of interest and value in showing the rate of obliteration of a cavity. One's change stands by the sudden abrupt diminution in volume during the first few days, then follows a steady small decrease, and, finally a further slowing up towards the end of healing. Occasionally one finds a cavity that has been getting progressively smaller and has reached say, 100 cc., suddenly increases to 400 cc. It is clear in such a case that some adhesions have grown away or a further undrained loculation captured into the main cavity. Such an occurrence is at once appreciated by this method, whereas the "By guess and by God" method would be unable to appreciate the setback that had occurred. The system of measurement is not without possible error, and it is very greatly to understate the volume by failing to arrange the patient in the optimum position for filling the cavity completely. If one sits too long, one or two pillows are left under the shoulders and the middle of the bed

allowed to dry, strictly infection-resisting results. The drainage hole must be at the highest point.

As the volume of the cavity progressively diminishes the drainage tube may be correspondingly shortened or replaced by a narrower one. On the whole, one should not be too quick in making the tube narrower. When the cavity holds not more than 10 c.c. a small tube of only half-pipe size or a tube bigger need be left in, and on a day or two it will be found that the volume is approximately 5 c.c., it is now necessary to leave in only a piece of Garet's tubing for a day or two, for such a measurement means one is dealing with but little more than a sinus tract, through the pleura wall, and this should quickly close. When these smaller cavities are being measured it is better to attach a fine catheter to the end of the syringe and insert this as far into the chest as possible, so that the fluid is delivered at the bottom of the cavity and will displace air there it. Otherwise, if only allowed to drop into a small opening an air lock quickly forms and a false reading results. When the cavity is down to about 10 c.c., it is good to make it a rule to run some liquid in and then make absolutely certain of the new shape and position of the cavity. The oil should be run in by means of a fine catheter, or dropped above. The information obtained is invaluable and gives one absolute confidence in dealing with the question of infection-resistance. Moreover, the x-ray picture obtained serves as a permanent record.

Some illustrations of the application of these principles are an advantage.

(1) A boy, aged 13, had an empyema which had existed detection for some ten weeks. At operation a small cavity (about 70 c.c. in volume) was found lying up under some of the lower portion of the capsule and having very thick, rigid walls. Its high position rendered necessary the use of a fairly long ascending drainage tube. In spite of the rigid walls, the lung expanded very satisfactorily, and on the fourteenth day the cavity measured only 5 c.c. Following one's usual practice, Ispodol was inserted into the sinus and the resulting picture showed nothing more than a rather long and irregular track, not opening into a pleural pocket. A piece of Garet's tubing was placed in the wound and shortened daily for a few days and then removed. Healing of the wound was, however, somewhat slow. It would become slightly inflamed, there would be a slight increase in temperature and then, on application of a hot fomentation, a small discharge of pus and subsidence of the local signs. The question naturally arose as to whether the tube should be replaced or not. The most experience along before deciding such a step was, consequently, to make absolutely certain whether a pleural cavity wall existed, or whether it was indeed a rather long, fibrous sinus tract. Ispodol was run in again, and again failed to demonstrate any pleural pocket. Knowing this, it was felt that one could advise with complete confidence against replacing the tube. He had had a long illness with a period of ten weeks in which an unfavourable

suppense was present, and his general condition had suffered considerably. It was, therefore, left the current thing to do was to send him away to a convalescent home. This was done, and when about two months later he was usually recognizable as the same boy. He was robust and well-covered, and the wound was soundly healed. Any examination of the chest was probably unnecessary.

What it is wished to stress on this man is that one could send this boy out of hospital with a discharging wound with complete confidence, knowing on fact that no improvement in general health was all that was necessary to complete healing. On the other hand it would have been impossible to send him away with a tube in place, because healing would undoubtedly have been unnecessarily delayed.

The question of sending a patient out of hospital with a tube still in is one of first importance. It is a question which is, unfortunately, only too prevalent. There is only one thing that justifies such a procedure and that is if one is dealing with a chronic suppense which has been inadequately drained and it has been decided to give the study three to six months adequate drainage before doing anything else. Under these circumstances it is of course unnecessary for the patient to stay in hospital providing always that one can be sure he is under constant and satisfactory supervision and the tube is not allowed to come out for any reason. But in the treatment of an acute suppense such a practice can only be condemned as unethical and unsafe. If it is necessary for the tube to remain in, then there must be a steady skill undisturbed. If there is such a steady then the patient is not cured, and to send him out of hospital is simply waiting for trouble. It is all very well to say that he is going to be looked after or is going to stand in a week's time or some such thing. It is too speculative. The final doubt about the wisdom of the correct time for removal of the tube are the complicated and full of possible traps to be left or made to discuss. It is the man that is taking a little longer than usual to heal that is liable to be sent out in this way by an impatient doctor, and he should remember, it is just the sort of case that needs the extra care and attention. It is from this sort that chronic suppenses are made. One may not see the patient again for weeks, by then time the tube has probably come out or has been taken out (or slipped in?), he has only a small wound inadequately draining a chronic chronic cavity with chronic infected wall. One should only consider to handle a patient recovering from an acute suppense in an out patient under the most of circumstances. The medical one has seen the case is totally inadequate for a condition which may progress into such a serious problem as a chronic suppense can be.

(3) A man aged 25, suffering from an old post-diphtheritic laryngeal stenosis, developed an acute respiratory infection which necessitated a reopening of his old tracheotomy and was later followed by the development of an abscess at the right lung.

When first noticed the pleural fluid was purulent, but rather thin and

entry and aspiration was started out. Later when the pup had thickened and better look-alike had occurred it was felt that more adequate drainage was indicated. Fig. 2 shows the chest before aspiration. Fig. 3 and 4 show it in upright and horizontal positions after aspiration and replacement by same air. The value of this step was decreased rather in the power, and it can be seen that an enormous cavity is present representing almost the complete hemithorax. On one instance 1,400 cc. of fluid were



Fig. 2. *Rhyssalus* (Pupa) before aspiration. (2) (Fig. 3)

aspirated. It is to be noted particularly from the views in two plates can be used to demonstrate that, whereas fig. 2 merely shows it. In view of the size of the rhyssalus its relatively recent ascent and the very poor respiratory mechanism that was present nowhere, it was felt that a pH specimen at this stage would be useless. Accordingly, an attempted drainage by means of a No. 18 catheter was performed. This drained very well for three or four days and the temperature fell. As is often happens, however, drainage then became less satisfactory and the temperature began

to run again. This condition was the result of contact, as had open drainage resulted. At operation the large dimensions of the cavity were verified. The efficiency of the open drainage is well born by the subsequent measurements of the cavity.

Effluent specimens	2nd day	3rd day	4th day
2nd day	200 cc.	100 cc.	100 cc.
3rd day	100 cc.	100 cc.	100 cc.
4th day	100 cc.	100 cc.	100 cc.

On the thirty-ninth day it was found that following some previous difficulty in releasing the tube it had slipped out and remained out for some twenty-four hours and the tank had already narrowed. Ten days at this time was small in amount and not greatly painful, had there is no doubt that many people would have left the tube out, thinking it was a



FIG. 2. (From case 1, above.) (Lipiodol, Compagnie, S.A., B., C.). The patient has peritonitis, general pain, etc. (approximate). It is evident that the fluid has been withdrawn from the fluid present.

good time to do so. The treatment of the cavity showed itself more than a few times, and the results of withdrawal of lipiodol is seen in fig. 3. No comment is needed upon this figure, it is self-explanatory. The tube was left in and shortened gradually until finally on the fifty-ninth day the cavity only measured a few cc., and a lipiodol x-ray revealed the condition shown in fig. 4. In other words, there was a mass back down to the pleura, but no pleural space. The tube was now left out and looking rapidly covered. Actually for the first seven days it was probably scarcely necessary to retain the tube, but one should be slightly on the safe of safety in such a case, and a few days extra can do no harm. Even with this, the

whole time of healing was eight weeks, which is not an excessive time for a cavity originally so large and for a patient with the disadvantages of a tuberculous taint.

One often hears from experienced that the drainage tube is keeping the lung from expanding. This scarcely ever happens; the tube is usually pushed out in cases when the expanding lung encounters it. In fact, this constitutes a further "trap" in management. As the cavity diminishes it becomes increasingly difficult to keep the tube in place. In such cases it can be firmly fixed to the chest wall by strips of striping passed through the subligament in the tube. Unless great care is taken to make sure the tube stays in, it may come out a short while after the dressing has been done, and come out perhaps once the following day. Then it had the time of events leading up to a chronic empyema. By the next day the hole has contracted to such a degree that it is exceedingly difficult to reinsert the same tube. The recommended regimen for such promptly decides to put a smaller tube in instead. Very often the next one at hand is remarkably smaller, and is inserted. This procedure is very likely to happen all over again, and the most judicious step is that the attendant getting weary of finding the tube run every time the dressing is done, and finding difficulty in reinserting it, promptly decides the time has come to remove it, and does so. I have already described the chain of events that is liable to follow this step. There is no question that a tube which has come out should be replaced at the earliest opportunity, and, unless there is some other very good reason for replacing it by a smaller tube, the same tube or one of equal size must be used.

It frequently happens that the tube is noted to be out at an evening dressing, and is left out all night by the nurse, who thinks it is not necessary to disturb the housemaid and that the morning will do just as well. This is quite wrong; if it is difficult to get it back at that time, it will be even more difficult to get it back in the morning. Actually, by placing a dressing under the opposite side one is within the exposure of the affected side and by getting the patient to move the arm well above his head one is to elevate the output, it is usually possible to get any one tube back again, providing one first ascertains the exact direction of the canal and is prepared to be refused for time for a minute or two. If a tube has been left out so long that it is impossible to replace one of equal caliber, and yet one is certain that no smaller tube should be used one should insert the largest possible tube he can get in, and at the end of the time it will be found that the hole has contracted (the wound may become around a tube) and a still larger one then be put back. If such were not possible it is better to give an aspirator in order out of all sorts rather than compress.

There is one more "trap" in dressing an empyema which should be widely known. When the dressings are taken off, frequently as many as may be noticed that the tube is not in the wound. It is then frequently



assumed that it has slipped out amongst the dressings and has been thrown away with them. Another tube is put back and everyone is happy. There is only one way to repeat such an error. If the tube is not in its place in the chest, then it should be assumed to be inside the chest and no more pains than is actually where it is. I have seen this happen so early in the first week after operation, but the same could take its place on (days to four weeks), when the dressing is becoming less as granulation and infection and so, perhaps, bring down at odd times by different people. When an outpatient has taken longer than usual in healing, then a more severe tube is to happen, and one should be very careful if asked to put a new tube in an outpatient wound because the old one has "slipped out." Under such circumstances one should demand to see the old tube. Often one finds it is only second-hand information that is being given that no one has actually seen the tube or seen it thrown away. In fact, as already stated, usually been assumed it was in the dressings. A physician has to be especially careful at this time, since in most cases he has the greater part of the post-operative care delegated to him. Unless it can be proved conclusively that the tube is not inside the chest, then the last must be assumed. The chest should first be tapped to see the tube is under optics, and if this examination is negative, then the interior of the cavity should be explored by means of a fluoroscope, cystoscope, bronchoscope, or some such instrument. Only in this way can one be sure the tube has not been left inside.

It is an extremely serious thing to have such a tube, because healing can never take place until it is removed, and it frequently happens that in the course of the months (or years) that follow such an incident as a lost tube a suggestion for all the doctors, nurses or house-surgeons concerned have changed, and no possible prominence as a cause of the discomfort can be entirely overlooked. Such a thing may happen again and again and there are many instances on record of one or more tubes being removed from a chronic empyema cavity.

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## THE MEDICAL OFFICERS OF GREENWICH HOSPITAL

FROM A.D. 1570 TO 1800

By E. B. MARIE (Lancet).

The Manor of Greenwich (situated on the London tongue) has belonged to the Crown from a very early date. The Conqueror granted it to his half-brother, Odo, Bishop of Bayeux, and at the Dissolution Survey, in 1535, the latter had sold it to the Bishop of Exeter, at that time Gilbert Maunsell, the Conqueror's physician.

On the disgrace of Odo the manor reverted to the Crown and has remained in the possession of the Royal Family ever since, with the exception of the Commonwealth. King Henry VI let the manor to Humphrey,



Duke of Cornwall, who received a grant allowing him to replace various lands in form a park and to forest his manor there. The Duke then took the palace on the spot where the main wing of the Royal Hospital now (1784) stands.

At the Dissolution Charles the Second found the palace much dilapidated and he began rebuilding, but the work was not completed, and William the Third, "desirous of promoting the moral strength of the

Hospitals gave it with other buildings and lands adjoining for the use of three English widows and their children, who, by age wounds, or other accidents, should be divorced from further service of war.

Letters patent of William and Mary passed on October 17, of the fifth year of their reign (1686) for the incorporation of the war and in the following year (Mary being dead) William the Third communicated the Hospital to Charles Patient dated March 13, 1686.

The Directors are chosen by the Lords of the Admiralty and consist of a Governor, a Treasurer, 1 Captain, 2 Lieutenants, 2 Chaplains, a Physician, a Surgeon, a Clerk of the Hospital, a Secretary and an Auditor.

The following list of the Medical Officers has been obtained by searching the minute books and from accounts of Greenwich Hospital preserved at the Public Record Office. It is probable that it may not be quite complete.

Dr. John Maynard's appointment as a member of the Council on January 10, 1655/56 and Dr. Coker's name is given as a member of Council from 1659 to 1701. Dr. Coker was appointed Physician without salary, on November 18, 1700. There is no note of his resignation, but we find that Dr. William Mauley was appointed on January 6, 1712/13.

I think that there is no doubt that Dr. Coker is 8 Salisbury Coker, Physician to St. Bartholomew's Hospital. He was a son of Nathaniel Coker, gent. and was born at Condercote, Surrey. Matriculating at Trinity College, Oxford, on July 1, 1678, at the age of 17 years, he took his B.A. in 1681, his M.A. in 1684, his B.Med. in 1687 and the D.Med. in 1691. He appears to have been in practice at Greenwich, was elected Fellow of the College of Physicians in 1696 and Physician to St. Bartholomew's Hospital in 1708. He died December 24, 1730 (Clark's *Roll, Porters' House Greenwich*).

William Mauley is possibly the same as the same who took his M.D. from Poenick College, Cambridge in 1695. He was a son of William Mauley, gent. and was born at Sturminster, Dorset. He matriculated at Lincoln College, Oxford in 1684/85 at the age of 16 years and took his B.A. there in 1690. He was an Extra-Licentiate of the College of Physicians in 1708 and is noted as having been in practice at Canterbury (Voss's *Annales Cantabrigie*).

On December 20, 1711, Dr. William Oliver was appointed. William Oliver was a son of the second family of that name settled at Yoxworth, Lincolnshire. He received his medical education at London in December 1692, at the age of 24 years. He was a surgeon in the Duke of Monmouth's rebellion in 1685 and was present at Sedgemoor, from which 1681 he was lucky enough to escape and find safe hiding among friends. After the Bloody Assize he is said to have come to London in the company of Judge Jeffreys' clerk. He occupied in Holland and returned as an officer in the

army of William the Third in 1688. In 1692, at M.A., he was admitted a Licentiate of the College of Physicians, and he was Physician to the Red Squadron in 1693. In 1709 he settled at Bath. He was elected F.R.S. in 1709/10. He left Bath in 1709 to become Physician to the Naval Hospital at Chatham, from which he was promoted to Greenwich in 1714. He died on April 4, 1746, and there is a monument to him in Bath Abbey (*Munk's Roll*).

Dr Oliver was the author of three small books, of which the best known is his "*Practical Observations on the Bath Waters*," first London, 1707.

The William Oliver of Greenwich must not be confused with another Doctor of the same name who practised at Bath, and was the surgeon of the Bath Oliver Hospital.

On April 26, 1706 Dr Richard Morison presented his warrant as Physician. He was still serving in that capacity in 1748.

Dr Jonnes was appointed a Doctor of Greenwich Hospital with Mr. Morison, at the recommendation of Dr Marston and Captain Guy, December, on February 11, 1706/7.

Richard Morison (Morison) was a son of Richard Morison, M.D., F.R.C.P. The son was admitted a Fellow Commoner at St. Catherine's College, Oxford, on November 23, 1696, having matriculated at Exeter College, Oxford, on March 15, 1695/96, aged 27 years. He became M.D. Oxonia in 1697 and Fellow of the College of Physicians in 1701. He was Physician to Greenwich Hospital from 1714 to 1734, and died February 1, 1740/41 (*Munk's Roll*; *Wren's African Osteology*).

On January 28, 1740/41 a memorial was presented from Dr Jonnes, late Physician of the Hospital, requesting that he had been obliged to resign his appointment on account of the ill state of his health, and praying in regard to his successor's nomination the Board will be pleased to take his case into consideration. Upon which Dr Hall, the present physician of the hospital, requested the Board that he was very willing, as regard to the poor gentleman's successor's nomination, to remove and submit to any resolution out of the salary of Physician, that the Board should think fit. A sum of 400 was granted.

Dr Hall is Stephen son of Henry Hall, surgeon and Merchant Taylor of London. He began life as a Surgeon in London but relinquishing surgery he was admitted an Extra-Licentiate of the College of Physicians in 1704/05. He died on October 29, 1731, aged 56 years, and is buried in the family vault at West Ham (*Munk's Roll*).

On November 3, 1741 Dr Hall the Physician to the Hospital being dead, and Mr Collicourse, who is appointed by the Lords Commissioners of the Admiralty to command here being in the Fleet with Sir Charles Wager, it is ordered that Mr Nisbey the Dispenser "shall make and give the demand for drugs and medicines for the use of the Dispensary, as Dr Hall did till the arrival of Dr Collicourse or further order."

On December 24, 1742, Dr Cockburn presented a warrant from the 14. Honble the Lords Commissioners of the Admiralty, appointing him Physician to the Hospital, and also another warrant appointing him a Director in the room of Dr Hall, deceased, both bearing date October 20 last, which was read, and he took his place at the Board.

Dr Cockburn is William Cockburn, M.D. He was born near 1667 and appears to have qualified at Leyden. He was admitted Licentiate of the College of Physicians in 1692. He died on November 1, 1759, aged 92 years, and was buried on November 4 at Westminster Abbey. Dr Cockburn was twice married, his second wife being Lady Mary Ffolliott, daughter of the 6th Earl of Denbigh. In the Autobiography of Mrs Delany he is called "an old, very weak quack," and his second wife is spoken of as "very ugly." His will, signed in the parish of St. George's, Marston Square, was proved on December 12, 1759. Dr Cockburn had a large and extensive practice in London and among his patients was Queen Anne. "Maid & Bull" has no fewer than eight books by him, two of which deal with naval matters. They are—"The Nature and Cure of Distempers of Seafaring People," with Observations on the Death of Seamen; a, H.M. Navy. First London 1698; and "The Diseases, or a Treatise of the nature and cures. Also an Essay on Bleeding in Ports." Two London 1698.

The next physician of whom I have note is in a minute of the General Council of September 2, 1750 (Admiralty, vol. 20, p. 273). "That having received a letter dated the 26th of June last from John Cleveland Esq. Secretary to the 14. Hon the Lords Commissioners of the Admiralty desiring to know—what may be a proper allowance, to settle upon Dr Cockburn, Physician of the Hospital—who on account of his great age and infirmities had applied to be superannuated—they took the same into consideration, and acquainted Mr Cleveland that they were of opinion that £100 per ann. being about half the Physician's income, would be proper during his natural life, towards the support of himself and his family, which they had requested to have prepared as their present memorial had not the matter Doctor Cockburn's death, which happened on the 1st of the last month, prevented them, however they are of opinion that it will be reasonable that an allowance of £100 a year be made to the said Doctor's executors from the 26th of September last, when Dr Brown the present physician was appointed, to the day of the said Doctor's death."

The Dr Cockburn here mentioned is, I think, David Cockburn, whose biography is given in the following. A note of the cause of David Cockburn took the M.D. Edin. on May 14, 1755. He obtained his Licence to practice on June 19, 1756, and became F.R.C.P. Edin. on August 23rd, in the same year.

The biographist would appear to be a wrong one. There is a copy of the French Edition at the French Museum, but I do not recollect having ever seen any other than the one shown here and which is in my own collection.

son. It seems to be a rather rough word expressing, of the late Swedish period. The admission of letters after his name goes to the information that he was M.D. F.R.C.P. Edin and Physician to the Royal Naval Hospital at Greenwich. With the sanction of Mr H. E. Fowell the following tentative statement was composed:—

*College Regis Medicorum Edin Acad, Greenwiche: Regis Medicorum Universitatis Medicae.* The Latin word *persecutionem*, meaning an affliction or hardship for all people, is mentioned by De Cange in the Glossarium as a variant of *persecutionem* and is defined as follows:—*duress, constraint, or any misfortune or popular affliction which induces lamentation.*

Dr Bacon appears to have been appointed on September 22, 1769. I have not been able to identify him.

My next source comes on the record of the General Council held on December 22, 1780 (*Admiralty*, vol. 12, 1781).

Dr Hornish Physician to the Hospital having by his letter of the last and represented that having served his apprenticeship in the 17th year of his age and having received information advancing daily he has thought of requesting his employment, provided the Court would be pleased to grant him a recommendation for his future subsistence and support. They think he may have the same as Dr Cookhouse had. This was confirmed at the Court held on December the 20th. The Court says for 1780 as before so that James Hornish M.D., late of Greenwich, died at Greenwich September 25, 1780.

The surgeons are not so easy of identification as the physicians. The following statement issues:—

1784 December 12, Mr James Christie appointed surgeon. His accounts for 1782 show that he had a salary of £200 lbs. beginning on January 1, 1780, and an allowance of £80 for his current. Christie appears to have died or been superseded before December 2, 1784.

The minutes book (*Admiralty*, 17, vol. 102) gives the following note of a General Council held on May 24, 1784:—"The Court took into consideration the matter relating to the supersession of Mr Baker the surgeon, referred to by the last General Court, and being of opinion that his great age and infirmities must have rendered him in his incapable, that he can't be able to perform the duty of his office with that activity and vigour which the great number of the patients now in the Hospital must of necessity require. It was resolved that he be superseded and allowed £50 per annum for life or toward for his long and faithful service in the Hospital of which he has been surgeon near 25 years.

It would seem from this that Mr Baker must have succeeded Mr Christie.

The next note giving the name of a surgeon is found in the minutes of a General Council held on December 11, 1785, wherein issues: "the resolution of the Council of a memorial from Mr Allen, Surgeon of the Hospital, setting forth that the great number of patients lately admitted has so

much increased the business of his branch of city that the roads and routes allowed him full very short of the expense and paying for such additional allowance of these items as shall be thought reasonable. In accordance to it he is allowed 2 children of cost, Post allowance 240 is of cost, to commence Midwinter 186, 7 children of cost and 120 is of cost for his apartment and 5 children of cost and 120 is of cost for the surgery.

At the General Council held on September 2, 1766, Mr. Allen asks for an addition to his salary and is granted 4/8 a year extra.

At the General Council held on May 2, 1766, it was voted "that the surgeon a first assistant may be allowed provision as a prisoner also in addition to his present token, the present person in that employment having been a surgeon on the Navy and it being intended that some but such shall be transferred be appointed thereto.

In order to make the surgical side a little more complete the following schemes from the minute books may be recalled.

Albion, vol. 10 p. 175 "The Court took into consideration the appointment of a person properly qualified for giving relief in the case of ruptures and Mr. Lee being recommended as a very fit person for that service, the Court order it to the Directors to examine into the necessity of the service for the good of the prisoners and to report what way be proper to be done thereby." The date of this minute is May 16, 1762. At the General Council held on December 7, 1765, it appeared "that the General Court having referred it to the Directors to examine the necessity of appointing a person properly qualified for giving relief in the case of ruptures, and Mr. Lee, who was recommended for that service, having attended them with some of the prisoners who had been under his care for that disorder about 12 months, when it was proposed and agreed to by Mr. Lee, that the languages of Henry Wicks, George Davis, Richard Taylor and Isaac Barley, four of the said prisoners, should be taken off, and continue so for 4 months, in order to prove that the said five prisoners were cured as was then asserted by Mr. Lee. The cost of which was recommended to the physicians to see it performed, and to make his report thereon which has been done accordingly but the Directors having been informed that reflections have since been cast on some of the officers of the House, with regard to their conduct in transmitting the other they thought proper to recommend it to the Council, together with the Physicians Surgeons and Dispensers, to make further inquiry with regard to the progress of the cure of the aforesaid five prisoners and also with regard to one other ruptured prisoner, put under the care of Mr. Meares, who has for several years supplied the hospital with iron, while the Council have done, and reported the result of their inquiry to the Directors from all which it appears that the prisoners under the care of Mr. Meares by the application of his means only as it is easy, and capable of giving about three proper shares in time who have been under the care of Mr. Lee. The Directors therefore see no concern for the additional expense of such an officer.

At the Court held on December 7 1735, The Court took into consideration that part of the Denon's memorial concerning the captured prisoners under the care of Mr Lee and Mr Moore, together with the Cockburn's report dated July 1, 1735, the Council's report, dated October 20, following: a paper containing Lord Nottingham's instructions of the state of the case of those under the care of Mr. Lee, taken on the September 18 1735 and laid out.

"Mr Lee was called on, and gave an account of his transactions in relation to that affair.

It was agreed that the bandages on Henry Nichols and George Davis—should be taken off, and so continue for fourteen days, in order to determine the matter with regard to their cure; and that the said two prisoners should be put under the care and custody of the Levee Committee and Council of this house, to be viewed by them once a day in common, if they think proper, but no person is to touch or handle the parts of either of them nor presume to give any medicine."

On December 8, 1735 the Court "viewed Shadrach Benjamin a prisoner, who has now a rupture visible on him; George Davis— who declared he had left off his bandage for 12 or 14 minutes, except now and then for a day or two, and that he has not had his bandage on for 4 months together within that time, and he appears to be now well. Henry Nichols declared he rarely believed he was perfectly cured, but as it is to be remembered that Henry Nichols had a small deformity on the left side of his groin.

The matter was then adjourned for a fortnight.

On December 22, 1735 the Court being informed that Mr Hardy and Mr Hartman Tho Mays' Assistant-Surgeons, and others of the bandage together with Mr Lee were attending, they were desired to walk in, when Henry Nichols and George Davis were again viewed and this matter being discussed all parties heard.

"Mr Samuel Lee, surgeon, was appointed to take the care of all the prisoners during the year 1736 and that he be allowed for the same £180. On a draught the votes were equal.

At the General Court on January 15, 1736 the motion was carried that Mr Samuel Lee surgeon be appointed to take care of all the prisoners.

affiliated with hospitals during the year 1735 and that a room be assigned Mr Lee to keep his medicines in but that no money be expended in fitting up that room."

On January 26, 1736, a report was laid before the Committee of the trustees of the captured prisoners under the care of Mr Lee, and the surgeons of Deptford and Whitechapel Yards and the assistant surgeons of the hospital attending. They were called on with whose assistance the Court considered the present state and condition of the same captured prisoners, and having compared the same with the Council's report are of opinion the prisoners have received great benefit and advantage from Mr Lee's applications.

Resolved that he be continued in that office and paid £200.



At the Court held on December 8, 1784, "Mr Lee applied for a proper apartment and an allowance for board and medicines. The Court ordered an examination of the 30 captured prisoners and to have them cured in order to make them report.

On January 26, 1785, "Mr Lee was ordered to lay a report before the Council of the state of the captured prisoners under his care, whom if all were well and the Council had previously examined. Mr Lee was ordered to choose who might go without hospitals, and he agreed to Philip Short, Edward Woodford, Tho Wright, Thom Fulkerson, John Bell and Wm Warner which six men were ordered into a separate ward and devoted space to the Physicians and Surgeons and their assistants to examine them and report. The Directors heard that the raptures to Woodford, Fulkerson, Bell and Warner "were down" that Philip Short had a "febrile" and two raptures seemed coming down, and that Thomas Wright had a tumor and no rapture.

The report was considered and it was suggested that the state of the 6 prisoners should be examined by such surgeons as the Lords Council desired please to direct. The nearest case is to be taken that none of the six want any hospitals, nor any extraordinary means to keep up their raptures, or hold any communication with Mr Lee.

At the Court held on June 4, 1785, Mr Lee returned to court before the Directors in person and it is noted that — "Mr Lee had a baricard of the prisoners he pretended to have cured and desiring to observe the order of the General Court, with regard to further legal. The Directors advised to the Court whether Mr Lee should be continued any longer in his employment being of opinion Mr Lee can be of no service equal to the great losses made use of by the general surgeon.

The Court considering further, resolved "that Mr Allen the surgeon in the hospital discharge a number, not less than six prisoners whom he can attend are now captured and that they be put under the care of the Council of three and their state reported on.

At the General Court held on February 9, 1786, the report of the General Council was read, and it was found that John Dwyer was cured by the operation of cutting. John Harvey is not well. — the post men did not make an effort to come down. John Stevens and Andrew Cooper are both captured. Daniel Dughey was not examined as Mr Lee did not attempt his cure.

The Council voted that Mr Lee be discharged.

In the case of Mr Lee and the captured prisoners the authorities at Greenwich Hospital seem to have accepted him word for the cases without sufficient enquiry at any rate in the first instance. The army medical authorities, on the other hand, seem to have dismissed Mr Lee from the list. The following is the 4th page of a tract bearing on this subject —

The Trustees of all the Trustees before the Right Honourable the Lords, and Others the Commissioners for the affairs of Chelsea

Hospital, he has an estate in the Duchy of Cornwall and Dorsetshire of valued Lxxv. per year. To which is added A Small Annuity of ten Moidores of the Bishopric of Exeter (Belongs Rusby and Cousin Hunt, an Assistant-Surgeon to the Majesty (London (Printed by J. A. P. Knapton in Ludgate-Street MDCCLXV).<sup>1</sup>

Cheselden was surgeon to Chelsea Hospital when the matter was first raised. Lee applied for the post of surgeon-major at Chelsea on January 21, 1740/50. He came from Bristol Street and put in a voluminous certificate of patients whom he said he had cured. One of these had been declared incurable by Rusby (1) himself.

The Commissioners decided to give Lee an opportunity to look such a person over as should voluntarily submit himself to his cure. He was to have a list laid, there was to be an interference, but the Commissioners determined that the real test of the cure should finally be decided to them by their own surgeons. There were Cheselden and his two assistants, Mr Thomas and Mr Reed, then living in Chelsea.

Cheselden appears to have been suspicious from the start. He declared that the evidence of cure was insufficient and such as he as a surgeon, could not accept of, without betraying his trust to the Board. Rusby and Huxham (2) agreed with Cheselden that from the evidence Mr Lee could do no more in such cases than any other surgeon. Rusby, on his appointment to Chelsea Hospital, had open before the Board the necessity of the old case, on their false declarations and shiftings. Lee did not attempt to support these statements to the Commissioners but brought an action against Rusby in Westminster Hall for defamation. Two patients swore that Lee had cured them. A month later these two men were found with tumours on and when these were removed the ruptures appeared and the men acknowledged that they had had these tumours on at the very time they swore that in Westminster Hall that they were cured.

Lee was dismissed and published his version of the matter, stating Cheselden, Rusby and Huxham. I have not seen Lee's first pamphlet. On July 16, 1746 Rusby arranged that several of the principal surgeons in town should examine the men whom Lee claimed to have cured. Eleven of these were found to be young women and the imposture of two of them immediately appeared on removal of the tumours. Rusby and Huxham seem to have considered Lee not worth powder and shot, but after deliberation decided to publish their version of the matter, which they did under the title given above.

They gave a short account of supposed lesions and then let the reader see before the reader. Lee seems to have placed every possible obstacle in the way of Cheselden, and the letter was quite rightly answered. The Secretary at War also distrusted the statements. One of the cured men died in July 1746. His body examined after death, showed that he was not cured the report being signed by Surgeons Huxham, Reed (2),

<sup>1</sup> The Cousin Huxham there is usually stated to be the author of the published work.

Manager Murray, M D [4] George Hawkins, Thomas Sparkes, David McMillan [5] and William Hunter.

On January 18, 1780/81, Chaselden was ordered to examine four men, and to be tried, in the presence of Busby and Hawkins. They found the captives not dead but there were obvious marks of violence having been upon quite recently. At a later date Chaselden found one old man with his captives down. This man put in a long affidavit, naming Chaselden of having given him a stone, which produced a violent shaking and trembling and brought down his captives.

The inquests went on till 1780, when on July 14th eleven persons, supposed to be dead, were examined, all were found to be wearing chains, and an account of these taken out of the eleven came down. This report is signed by Busby, Hawkins, McMillan [6], Peter Hamilton, Edward Norton [8], Robert Alder [7], Samuel Sharp [9], Joseph Paul John Thomas and Alex. Best.

An appendix to the West contains all the relevant extracts from the minutes of the Board.

Lee seems to have allowed Chaselden for taking going to speak a young captive without her trial of her methods. In 1781 he seemed satisfied that this is settled —

A Paper (Copy to the Surgeons (Deceased) the Surgeons at Chelsea Hospital by Samuel Lee Surgeon to His Majesty's Royal Hospital at Greenwich) — London Printed for W. Owen at Hammer Head, near Temple Bar MDCCLXXXIV.

This is a long and tedious pamphlet going over the same ground. He alludes to his success at Greenwich and asks "why then does any one still be so miserably weak at Greenwich and so obstinately miserable at Chelsea, in a physical point even we shall leave to the Surgeon to explain and will only suppose that there must be some essential difference between a cure and a bad cure." He ends up with a table contrasting the operations performed at Greenwich and Chelsea. At the former place he is mentioned as able surgeon, his conduct was unanimously approved. He cured upwards of 40 cases he was admitted by the surgeons of H. M. Yard. At Chelsea he is called an ignorant, he has been guilty of malpractice. He is said to have cured none of the patients, etc. etc.

An appendix and a postscript conclude this tract.

I am indebted to Mr J. Harvey Bloom for searching the Admiralty Records at the Public Record Office, and to the H. E. Fennell for much generous assistance.

#### REFERENCES

- [1] John Busby, Surgeon to the Victoria Hospital and Surgeon Surgeon.
- [2] See Chaselden's Essay. Surgeon to St. George's Hospital, and also Surgeon, and also Surgeon.
- [3] See Hamilton, Physician, to St. George's Hospital.
- [4] Manager Murray, Physician to Chelsea Hospital, and a noted chronicler.
- [5] David McMillan, Surgeon to St. George's Hospital and Surgeon Surgeon.
- [6] Edward Norton, Surgeon to St. George's Hospital.
- [7] Robert Alder, Surgeon to the St. George's Hospital.
- [8] Samuel Sharp, Surgeon to St. George's Hospital.

NOTES ON THE EPIDEMIOLOGY OF "SPIDER BURN" IN  
THE MOUNTAIN STATES, AUGUST AND SEPTEMBER, 1897.

By GEORGE J. COOPER, JR., D. V. I. (SQUILL), M. D., CHAS. E. K.

THE Mountain States have recently the happy hunting ground of many forms of insect life; mosquitoes, ticks, leather spiders and the like, the majority of which are harmless enough in their immediate effects. At the most there is the temporary annoyance of a mosquito bite or the annoyance of a grasshopper in the camp. There is one condition, however, known up and down the river as "spider burn," which is of a quite startling nature. It occurs sporadically during the summer in the middle and lower west but in the twenty years' experience of the local doctor it has been



previously unknown in Chesapeake, with August and September of this year, when there has been a widespread epidemic both in camps and cities. Few of the camps camping here escaped almost all the residents were affected, while Chassee attended the hospitals in hundreds.

Spider burn is interesting in that the lesions are extensive, and apparently very severe, but in reality are negligible. Further, the causal agent is the subject of much discussion and wild guesswork, as to which I can find no reference in the literature. The burn, as the condition is popularly

and aptly described, as essentially an area of inflammatory reaction with a sharply defined margin; the epidermis on the surface is raised by an opaque exsufflation vesiculae, forming a shallow thin-walled vesicle in situ. The vesicle is pale white to the deep cream of a gold or the deeper orange, being very thin and pulsed with polymorph leucocytes, from which it may get its pronounced colour. There is never sufficient vesiculae to make the vesicles tense. Owing to this lack of tension there is no oozing through the skin, the surface remaining sticky. The most striking feature is the complete absence of pain, burning sensation or general reaction. A very slight tenderness is sometimes present, but the lesions are so transient that scratching is never necessary, secondary infection being then absent. Although the inflammatory area is extremely small there is no induration or hardness, as one must only have I seen a so-called lymphangitis. The resolution of the lesions is dramatic. Within a couple of days the vesicle is absorbed, the surface dries, shrinks, and finally separates leaving an intact new epithelium beneath. The red raw patch, seen after removing a skin insect wound. The inflammation persists for a long time, in the case of the large ones for a month or more.

The lesions are of three types—

(a) Small oval or circular areas about one inch across. These are usually multiple, frequently quite small, and may or may not show the yellow blister.

(b) The "back" form. This is a skin lesion anything up to three inches long, usually single with or without the blister. One man had a patch "lance of Wales fashers" mark, on his arm, as sharply defined as though it had been branded.

(c) A large patch anything up to five or six inches in diameter. This invariably shows blistering, which differs from the blistering of (a) and (b), in that, while they present one single blister the presents a surface of multiple vesicular lesions (see illustration No. 1). The best description I have heard of this type is that it is like "a piece of putty crumpled."

One man may show any or all of these three types of lesion. The large lesions seems to be the uncommonest, the average man having about three inches. Arms, legs and neck are the most frequent sites, occasionally chest, thighs and abdomen. The comparative rarity of the face and neck-like regions of the chest is interesting. The overwhelming majority of the lesions are on those parts of the body lying close to the surface. The inference is that the causal agent reaches rather than flows. In the latter case lesions might reasonably be expected on any exposed part, possibly even to be those parts not in close contact with the surface. Inoculation bites during the night often occur on the chest and abdomen when these are exposed. It was to be had during this August that everybody wore some sort of impregnated sarong only. Two or three cases have had a type (b) lesion on the eyelids, in which a moderately extensive red-edged developed and disappeared within a couple of days. The suggestion is that they had

been lying with the head on one side, the open being that the hole would be in close approximation to the galea.

Difficulties arise when the cause of these bore' is considered. There can be no doubt from the appearance of the first two types that the condition is one of direct invasion by some blighting agent. The cause given to it by those authors of which 'spider bore' is a flowered variant, indicates a link in the pathological condition of a particular spider's unfortunate existence. Undoubtedly some food is responsible. From the fact that the bore' has a cherry margin, that on which it ever runs, and that no punctures can be found, it would appear that the food is excreted on the skin and is not ingested. It is difficult to see how the large type of bore' can be a direct contact bore'. It would take quite an appreciable quantity of food to produce a bore' covering most of an arm, as in the case illustrated, or else a series of wounds. In either case you would expect a large blister instead of the multiple vesicles that this type presents. Might the large one be an example of a combination vesicle, analogous to a pemphig moth? That certain insects do produce vesicular food is well known, e.g. the mealybug fly, the thistle beetle and some ants. The belief in the spider as the cause of this condition is widespread, but appears to be founded entirely on imagination. None of the references up to the day that I have met can describe the spider they named, nor whether it is even large or small. There is certainly a spider called a hairy spider which catches its prey on house walls and taking the first one within its long limbs as the victim's back, holding it immediately, possibly by means of some toxic secretion. This spider is however uncommon, while "spider bore" has been almost universal this season. It has never been seen on hoard 'spiders' nor, surely, if ever seen on house hangers, and if a spider was the cause of this bore' it would have to be a very very shy one which never came out in the evening but only when all lights were out and everyone asleep. It would also have to have the remarkable power of never being caught or squashed during the night because no single holder have ever been found.

In retrospect one would point to an outside insect as the one responsible. My knowledge of entomology is unfortunately insufficient to give it a name, or to say what kind of an insect it is. The last name is 'flying ant'. For convenience I will refer to it as an ant. It is golden brown on wings, chestnut on legs. The head, the wing bases and the terminal segment are black, but appear green from some angles. The wings are small almost rudimentary, and are normally kept under the wing cases. It prefers to crawl rather than fly, and does so with great rapidity. It disturbed on the individual it nearly always runs, the flight of wing, being only a look or two. On hoard they have never been seen in swarms, but nevertheless are numerous. They do not exhibit the community habits of ordinary ants, but forage on their own. It is exceedingly difficult to squash them, even after heavy pressure with a napkin ring they will run off apparently unaffected. They can be felt running about on the body but never bite.



strongly and instantly. Microscopic examination shows that the last abdominal segment has a telescopic part carrying the genitalia. Normally this portion is kept retracted, the two claspers (♂) only showing. On stimulation the segment comes out, and in between the claspers can be seen a smaller apical process. On gentle pressure this can be made to extrude a drop of fluid. (See photomicrographs.)

Although it is by no means conclusively proved, the evidence that dust must pass to the insect on the score of the breeding and unpleasant feeding conditions. In support of this view we have the following facts —

(1) These insects arrived at the same time as the house because provided.

(2) They are found more frequently than any other insect on the body (except the ordinary house fly).

(3) They can get inside a mosquito net, and larvae are just as common on those who use a net as on those who do not.

(4) They produce an oral fluid.

(5) Sleeping in a room definitely protects. The insects are seldom seen in a room where the door is kept shut at night. They are quite numerous at night outside, and the larvae are more plentiful on those who sleep out.

(6) No other insect has been found on board capable of producing the larva.

Against the conclusion we have —

(1) The tradition that a form of spider is responsible, a belief so wide spread that it must at least be considered.

(2) The crawling of one of these insects on the arm does not produce the larva.

(3) The insect is small and some of the larvae are very numerous.

The intensity of the irritant and the pressure used, have tend to corroborate some crawling insect.

Altho any treatment can be given with the possible exception of poison, I see little advantage or merit of treatment, but both on the nature of a phobic rather than for any good, I think they might do. If left alone the larvae have themselves in a considerably short time.



## Clinical Notes

### TRIF WORM CISTICEROSES EPILEPSY AS ILLUSTRATED BY A CASE IN A RURAL INFANT

By ROBERT GUYTON BRIDGES, F. R.S.E.D., F.R.S., M.D. IN LOND.  
D.P.H. DUB. I.R.

Trif worms, which sometimes ending upward as my hook, or hanging like a spider, appear almost at the entrance of all novel medical officers in town, be it hardly to speak making observations by Gabriel W. P. MacIntyre, R.A.M.C.

This officer was struck by the fact that epilepsy and cisticeriosis were closely associated when presented to his name officer. He then set to work and collected evidence which has proved that the larval stage was often present in the brain, where it was more aptly named cisticeriosis instead of with trif worms, epileptic epilepsy. This type of epilepsy is not a rare pathological occurrence, but in perhaps the commonest form of epilepsy in infancy, under MacIntyre's equally collected over many years of cases, which must prove that there are many more undiagnosed or unrecorded cases of trif worms epilepsy.

The patient whom I hereby report below is an excellent example of how all cases may be directly linked up, even with common, with no other link, but I am MacIntyre usually in London and he told me of his great discovery. I agree I had almost the significance of his first paper on May 1904. I was deeply impressed with the interest here given in because of the fact that usually such a case is ignored who had been under observation for ordinary epilepsy for all years.

Since then MacIntyre has published a full account of his research which more novel medical officers (and certain physicians) read, and because there is not a shadow of doubt that there are numerous of yet undiagnosed cases of cisticeriosis epilepsy among infants and children as well as among adults.

Before going further it is as well to refresh our memory of the life history of Trif worms. The larva worm is found all over the world, but in few countries that I suppose which there are cases epilepsy. The adult stage worm is only found in some small intestine and can live in an other animal. The mature segments of the larva worm, containing the eggs pass out with the faeces. The segments distinguish the eggs (but sometimes) containing the larva of the next stage. By this means they reach the stomach and intestine and hence out into the water and eggs which pass the stomach and under a lymphatic or capillary. These, on the right hand and large, the embryos are distributed all over the body. The embryos then burrow into the muscles or other tissues and grow to form a cyst or larval stage worm which, when mature, is about 6 to 10 mm. in diameter. These cysts or eggs pass out in the stool or urine as "round" eggs. When newly laid in stool by man (but by no other animal) the appearance is similar to that of the small intestine and is two or three months develops into a full sized mature worm.

Note that now can be isolated by both the trichlor stage (C) cisticeriosis and eggs worm stage of T. cisticeriosis (the pig) and some other elements by the systematic test. The systematic, when it was, is a small grey sphere as had before a white in cisticeriosis. In case the systematic seems to have a special predilection to settle in the grey matter of the brain where, if any cases epilepsy and other nervous conditions. I now propose to use the term larva of Cisticeriosis to illustrate the epidemiology and diagnosis of cisticeriosis epilepsy.



in lesions of cerebral epilepsy:—

(1) A positive Wassermann reaction in blood and cerebrospinal fluid.

(2) Syphilitic peritonitis of the right wrist (subacromial bursa and loose capsule) are not seen commonly in the same subject.

These differential diagnoses rest on the balance of probability but in this case I think anyone who has carefully studied *Shadrach's* (1884) paper will agree that the diagnosis is psychologically in favour of Sydrac being the cause of this most curious disability, and he was awarded as the first case of syphilitic epilepsy to be diagnosed in the Royal Navy.

There is one observation which indicates that this type of epilepsy may be common in the Navy. It has something rather unusual. It is characterised by quite a large number of the subjects, who are involved by epilepsy, during the lifetime for the first time in which he often has years service or more. I have not analysed the figures closely but the striking fact for epilepsy has not changed appreciably with the growth in the incidence of cerebral syphilis and epilepsy is characteristically dependent on periods in the life of the man, commonly less than a day. Therefore the relatively non-acute treatment of which epilepsy among the men would stand strange may be due to syphilitic aetiology. One or two important points about syphilis should be mentioned which were not mentioned by the above case.

The most common ail to diagnosis is the presence of subacute optic atrophy, which should be searched for all over the body. There may be no palpable syphilitic nodules, as in my case. There may be only one of these or there may be dozens. If it is not in blood it should be searched under fundus ophthalmi and identified (it may only show up as the long dead and calcified). No treatment for syphilis does it harm, and the prognosis is bad. It is, however, most important for the physician who is studying the diagnosis, because, in the opinion of the Army authorities, owing to the inability to differentiate with the symptoms of *T* when being or when passed through the disease has been made identical to ordinary syphilis.

Days sometimes have occurred an important feature overlooked, and I would ask every medical student officer to learn how to identify the symptoms of *T* which because I have found that in many official records either the words severely lugged on, "legs numb" or "Tremor" or for instance that used can be given for it, when a diagnosis of syphilis or others is made it is often negligible. Finally, it is necessary to remember syphilis may produce symptoms resembling degenerative whereas cerebral syphilis produces no delirious insanity, as well as, or in addition to epilepsy. Further, syphilis may be passed without whatever symptoms.

Again, I would emphasize that the recognition and timely removal of syphilis is only within its own attributes to the patient's brilliant progress made—work which is no supplementary and important that general medical officer who guides himself on being up to the case officer to treat readily. On the same as there in the British Army with Sydrac's reference in the *Principles of Epilepsy*, by Colonel W. F. Shadrach, R.A.M.C. *Trans. Royal Society Tropical Medicine and Hygiene* 1924, 23:10, 142.

A more accurate paper which gives radiologically information as to what to look for, is the paper by Major W. R. Bennett R.A.M.C. *Ann. Med. Nat.* 1924, January 4, p. 12.

NO. 1 IN A LINE OF MONUMENTAL LINCOLN THEATRE  
BUILT - 1910

Environ. Monit. Assess. (2015) 189:1029–1040

Swampcresses appear to have been introduced in the Tongue Valley since 1930. The swampy soil and sloughs have been thoroughly revegetated, and our knowledge of them is reasonably complete. Swampcress, however, is still far from perfect. The disease organism found in several isolated colonies from the isolated bank sloughs and some from isolated banks of a good slough which carries water Yeargas Florida. It is usually, continuous. It often affects on the poorly drained and usually swampy areas to have become more frequent. In sloughs it should be easy to avoid colonies for it is more usual to see swamp sloughs. It should never keep track, or, at least, widespread here high there. But in practice it is difficult to avoid being splashed with the contaminated water. Finally, adequate protection is definitely in progress. In fact, the swampcress is down on the lower swamp. Medical officers can do a good deal by wearing on the sloughs necessary for thorough protection and in the help of such patients in covering the legs with individual's clothes or bathing in swampy sloughs. It is a dry walking through isolated swamp.

[illegible][illegible][illegible]

(Harrison 12). On December 24 ectomphala had fallen to 2 per cent, and week was, however, her parasite-free day. Treatment was stopped for two months, and it was hoped that a cure had been effected. Although there were no definite symptoms, the patient did not look out well quite so well on February 5, 1933, it was found that ectomphala had risen to 12 per cent. Accordingly, a third course of Pfanstiel was begun on February 14, and completed on March 3. On March 1 ectomphala was 8 per cent. On April 15 the mites again returned (schizonts) over, ectomphala being 8 per cent. On April 26 a fourth course of Pfanstiel was begun, ending on May 15. At the end of the fourth course ectomphala were still 10 per cent, and miliary abscess (the skin) was begun on May 18, ending on June 5. On June 7 ectomphala were 8 per cent. A final course of Pfanstiel was begun on June 11, after a run of only eight days. This course was completed on June 20. Ectomphala were then 10 per cent. Succeeding blood counts on July 7, 16, 23, and 29 showed ectomphala of 4 to 5 and 21 per cent. On the last count a prolonged examination of smears after reticulation showed one schizontous egg, which was empty. On September 11 ectomphala were 6 per cent, and smears were negative. No symptoms had been observed for months, and the patient was considered cured.

In these are the interesting findings. Clearly, the physical condition showed strong correspondence with these, and, strangely enough, the patient would tell roughly whether or whether the count put in next would be high or low. There was definite loss of weight during the treatment. No outgrowth of liver or spleen, and no abdominal symptoms were present at any time. Uremia, a common symptom especially in the pyrexial stage, was also absent. Anemia was found to be severe, and was reluctantly treated.

There is not too often in hard diseases, and a sense of our cure, but rather in sitting to show that our methods of treatment of *Schistosomus japonicus* are not yet satisfactory. Recently an article in the *Lancet* dealt with a case of this disease which was cured by one course of Pfanstiel. But the fact of cure seemed based entirely on disappearance of symptoms, not was there any other history to suggest the possibility of relapse.

The fact of miliary abscess in China is agreed that Pfanstiel is the best drug as far as the treatment of the disease, but I have not as yet been able to say one more given anything like the amount shown above. Yet, even in three operations, no effect on the disease was by no means striking. The pyrexial period was no shorter than commonly the case when Pfanstiel was employed. Similarly, after completion of the second course, a second rise in fever was obtained on the night. But the case relapsed and it must be emphasized that throughout the whole period of treatment there was no possibility of a relapse. This tendency to relapse under treatment is the most satisfactory aspect of the drug. The disease is self-limited, for the parasite must lead an unproductive host and the weakness of the patient the appearance of symptoms with the very slow decline of ectomphala and increasing delicacy of finding even the clots, with one partly natural response independent of any treatment.

In the December 1934, volume of the Chinese Medical Journal is an article on "Treatment of Experimental *Schistosomus japonicus* in Rabbits," by T. Lee (English). I would like to point out some of the points in the treatment of *Schistosomus japonicus* in rabbits, though in many respects it falls short of an ideal species.

It would seem, then, that there is still the greatest necessity for the most stringent precautions to be taken by experts engaged in the cure of this disease.

## I. CASE OF NYLA AGAR.

C. S. BARNES, JR., M.D., and J. C. HENCK, JR., M.D., JR.

and

WILLIAM G. GARDNER, I. A. GILLESPIE, JR., D.D.S., JR.

N. Y., a 35-year-old male, was drafted in a ship on the Mexican coast 7½ miles in August 1931. While the ship was in Mexico he lived solely, sharing rooms with other naval cadets. In January 1932, he commenced to feel unwell, his symptoms being general malaise, night sweats and cough. He continued to work, but his symptoms becoming more marked, he reported sick on February 27, 1932. Medical examination showed that he was running a high constant temperature 104° F. at night, that he had profuse night sweats commencing a complete change of clothing, that his spleen was enlarged, that there were no signs of the lungs, no joint pains and no rash. He was discharged to Malar Hospital on March 1.

He was a patient in Malar Hospital for three weeks. During this time fever and sweating persisted and the spleen was distinctly palpable. Blood examination was normal; no parasites. Hematocytes were 7,500 per c.mm. His serum agglutinated *Bruceia melitensis* to a high degree 1:6,300. On chemical grounds and a glomerular test, he was diagnosed as a case of undulant fever. He was transferred to England, admitted to S. S. Hospital, Harlow and was discharged to Jersey on April 5. While on passage and in Harlow his temperature was normal and he had no relapse of symptoms.

On repatriation of his family to New York, he was drafted to a shore establishment near New York. He felt unwell until July 1933. At this time he began to feel "not of sorts" and "had night sweats." His symptoms persisted and he reported, 1. his medical illness in October 3. Examination showed that the spleen was markedly enlarged. Widal reaction test was negative. Serum showed an agglutination in the *Bruceia* group. Blood examination showed a slight depressed secondary anemia (red cells 4,000,000 per c.mm.) and a slight leucopenia (white cells 4,000 per c.mm.) the differential count was polymorphonuclear 65 per cent., lymphocytes 35 per cent., large mononuclear 5 per cent., and eosinophils 0 per cent. His condition was regarded as a relapse of his condition (see Table) and he continued his duty. Early in January 1934, he had an exacerbation of his symptoms and was sent to S. S. Hospital, Harlow, on January 5.

On admission to Harlow he was well nourished and did not look ill. He was running a slight evening pyrexia 100° to 100° F. and had night sweats. The spleen was considerably enlarged and reached to 5 in. above the umbilicus. There was some enlargement of the liver. There were some impalpable lymph nodes in the neck and axillary patches of a generalized erythematous over both sides (these were marked mostly at the roots of both legs). There was no agglutination in the *Bruceia* group. The Wassermann test gave an uncertain result showing full coagulation of 1:1000 up to the test end in the control tube. Blood examination showed a secondary anemia (red cells 3,500,000 per c.mm.) and a slight leucopenia (white cells 5,000 per c.mm.). The differential leukocyte count was polymorphonuclear 65 per cent., lymphocytes 35 per cent., large mononuclear 0 per cent. Higher than of gel reaction gave a strongly positive result. Smears from material obtained by puncture of the spleen in January 12 showed numerous Leishman-Donovan bodies.

Patient in isolation treatment with arsenic (3 grs. quinine) of two tablets and 10 grains quinine. Temperature at night reaching less marked spleen in evening, and blood picture, shows a slight improvement (leucocytes 6,100 per c.mm.).

Remarks.—The interesting features of this case are:

(1) The rapid diagnosis of infectious fever.

(2) The disease was contracted in Malta.

(3) The temperature curve was relatively high for a well established case, of late recorded never fell below 38.00 per degree.

(4) The Wimmermann test, which gave a clear cut negative result on March 18, 1910, and on October 13 (there was a history of when, quoted apple in 1910) on January 18 1911 on the same laboratory and with the same technique showed full infection of bacillus in the test and in the control (no antigen) tube. It was possibly in this the latter responsible for the positive result (infection) was also responsible for the diagnosis of the complement in the control tube. Further the interest of a control tube in the technique of the Wimmermann test might account for the positive Wimmermann tests recorded in some cases of typhoid.

#### A CASE OF GRENELL'S NOSE.

Dr. JACQUES CHAPMAN, O. D. HOSPITAL, LONDON, N. W. 3.

A woman was admitted to R. N. Hospital, Maida, on February 27 1908 with a history of having been under treatment off and on during the previous four months for an abscess on the left nostril which had healed and broken down repeatedly.

On admission he had an abscess about the size of a halfpenny on the inner wall of the left nostril. The cavity was covered by a polypoid growth and the edges were heaped up. The patient had no complaints other than her abscess, and no abnormal physical signs were found on any system. No loss of appetite was found.

Empyema of the cavity was proved on culture from the abscess and subsequently typical typhoid bacilli were discovered. Both Wimmermann and Indole tests were negative. He was treated by a course of intravenous injections of sodium salicylate. The abscess healed completely and the patient was sent to day.

On December 8 1910 the patient was readmitted with a similar abscess situated on the outer of her nostril, and on still another treatment, but it is of interest that her Wimmermann and Indole tests are now strikingly positive.

Specimens of secretion have been determined but it is noted that the patient looked after a history (or possibly) of a lesion of the nose. While there is a considerable amount of literature on Malta, I have not heard of a case of nasal sore.

(Remarks, Nurse).—The Wimmermann results in this case are of interest when compared with those obtained in the case of Indole reported in this review.

#### TYPHOID INFECTION AT HOME.

Dr. JACQUES CHAPMAN, W. D. HOSPITAL, LONDON, N. W.

Typical disease in the form of illness in non tropical countries is thought to be overlooked and this is especially so when the manifestations of disease are vague and unobtrusive, as in the case of two women referred to Surgeon, Commander Edmond in the Journal for October, 1910.

The two cases briefly reported below, belong to the same and serve to set phrases for an opinion of tropical typhoid in mind.

The cases have a clear resemblance in that they both occurred in different sites

I all agreed should be, who had not suffered from any symptoms—red legs after these visits I saw.

Patient No. 3 was a robust and healthy looking officer who reported from a sweeping ship.

He said he had had conjunctivitis and morning sickness for some time. In the act of vomiting he often brought up small pieces and at one time during these was more than that he thought he had broken out somewhat about it. The only other and physical sign found on examination was some slight conjunctivitis, which together with the symptoms suggested that he was suffering from a congested liver with distention of the portal vein. As this officer had served in China some months previously and had had similar symptoms in Singapore in 1918 a complete examination of the blood and stools seemed called for. The blood showed nothing abnormal, but the size of Schistosome specimens were 7 and on the whole then the hepatic symptoms were accounted for by the presence of many filariae in the portal system. He had had no trouble in China, but there can be little doubt that his infection was a heavy one, because on that country.

Patient No. 4 was a slightly built young officer who reported with conjunctivitis and loss of energy. I also saw the only abnormal physical sign found was some conjunctivitis and some pain in the epigastrium, which, together with the symptoms, would have suggested a paper about in the course of the trouble. He had lived in the Persian Gulf for 1 months previously, and upon a blood and stool examination was ordered. The blood showed a 4 per cent. conjunctivitis, and in the stools the size of the Schistosome specimens were found, and in the stools he had had no trouble in the laboratory. No other treatment was immediately available, he was put on a course of cod liver oil and in a few days he considered the treatment that he had not felt so well for a long time. When discharged to duty his stools were free from ova or worms, but he was ordered to report his stool examinations in three weeks time.

The trouble with tropical diseases is that one is inclined to look on them as well developed entities and to overlook the fact that the symptoms largely depend on the state of the infection particularly when the initial process is in the course of the illness. When it does happen, the infection is a mild one with probably only a few parasites present, we must not expect to find the symptoms of the full blown disease but instead we get a picture which might easily be attributed to some other tropical infection.

#### TRAUMATIC RUPTURE OF THE URETHRA

BY HENRY HENRIOT F. R. WILKINSON, I. M. S. R. N.

During the recent visit of H. R. W. Davidson to St. Helena a description is given of the illness, history is given, which, involving down a sharp road, occurred in the ship, history of injury and treatment. My point here is not to be told. All the symptoms were fairly pronounced with profuse pain, slight, several times were treated. There was a number of minor injuries, and one other contained a ruptured urethra.

A final collection on the treatment of this condition is suggested.

The patient stated that he was being outside the back of a boat. He stood up later, experienced pain in the epigastrium and his blood running from his mouth. He also thought that he was passing blood per rectum. Examination revealed free bleeding from the urethral orifice, and marked burning and swelling of the penile in the region of the urethra. Swelling from the urethra to the base of the scrotum. Examination digitally and by feeling the rectum, disclosed no injury to the wall of rectum. The abdominal examination, pelvic, etc., were absolutely silent.





are left in. These and a large one outside of and in front of the pelvis, were removed to bed.

The patient must be warned that, to avoid infection, to recover treatment for his stricture, or potential stricture, of his life.

Rational chemotherapy is more necessary in these cases. If any necessary strain against the outward motion, resistance and subsequent tendency of bed stricture, then certainly will.

Should improvement of urine already have occurred when the case is first seen, imperative drainage should still be done while measures are made to relieve the case.

The particular case referred to above progressed satisfactorily.

#### A CASE OF DIAPHYSEAL OSTEOMA

By Assistant Surgeon W. J. W. KILMER, M.D.

A patient, male, aged 15, reported at the morning sick parade complaining of sore throat and also mentioned that he had a swelling of his left arm. On examination of the left arm a lump was visible on the inner side of the thigh about 5 in. above the level of the knee joint. On palpation the lump was hard and appeared to be situated in the tibia. A diagnosis of osteoma was made which was confirmed by x-ray two polychromated radiations being seen growing from the lower end of the shaft of the tibia.

A series of x-ray photographs was taken and of all the bones likely to be similarly affected and the following conditions were found:—

Right. No abnormal area except condyles of the humeri.

Clavicle. Enormous mass over the sternal end, like on the right hand arm on the left.

Scapula. Two small cysts were seen on the anterior border of each scapula, one immediately below the glenoid cavity and one at the junction of the upper two-thirds and lower third.

Humeri. Right.—No condition was present at the junction of upper third and lower two-thirds of the shaft. Left.—A small cysts at level of junction of shaft and a small one above a little above.

Radius. A small cysts was present growing from the surgical tubercle.

Ulna. No abnormal.

Pelvis. There was swelling and irregularity of the inferior ramus of ischium and pubis, and also a spur of bone lying parallel to and attached to the inferior ramus of the pubis which appeared to be an osteoma.

Femur. Right.—There was swelling of the neck and wide irregular long irregularity from it. At the upper end of the shaft there were two polychromated cysts and growing from the lower end of the shaft there was one. Left.—There was marked swelling of the neck and one large cystic cysts, and at the lower end of the shaft were two polychromated cysts.

Tibia and Fibula. Right.—There was a large cystic cysts on the posterior aspect of the upper end of the tibia, and also a large cystic cysts between the head of the fibula and the tibia looking in character like the tumor from the latter. At the lower end of the tibia was a polychromated cysts. Left.—There was a large cysts, expanding the head of the fibula from the upper end of the tibia. There was also an osteoma growing from the lower end of the shaft of each bone.

Foot. No abnormal.

Patent suffered no disability except for slight pain on inner side of left thigh above knee.

Case admitted to Surgeon Captain W. B. Kilmer, D.F.O. R.E., for permission to publish this case.





products of knowledge and technology are granted. With reference to diagnosis, the importance of knowledge and of spirit is the ecological recognition of three domains is emphasized by all the authors.

**Medical Ethics and Deontology.** An Introduction to the Modern Trend, part of Deonton. By Walter J. Ebling, M.D. (Edinburgh), Professor of Dermatology and Venereal Diseases, Liverpool University, etc. First English Edition. London: Churchill and Co. Ltd. (1955). Pp. x + 202. Price 6s. 6d.

It is worth noting that we notice the death of Dr. Mitchell Jones, with whom most this book is associated.

The book that the volume has reached its historical value provides value as a fairly well consistently readable reference book and the high standard is well maintained. The work has been brought up to date with regard to the evolution of new concepts and the discussion of them of last importance. The volume of general therapeutics has been revised and in every case useful data in the previous edition.

**The Law of the Future.** Revised, Reorganized, Modern Law. By Isabel Marie Hutton, M.D. (1955). London: William Heinemann (Medical Books) Ltd. Price 6s. 6d.

The book will be of abiding interest to the general public, as well as to those concerned, professionally and otherwise, with the past and present of the medical law. It is well written, interesting, and will be helpful for the average layman as professional and some knowledge in the particular and important branch of medicine has been so often neglected.

We agree with the author's in her opening chapter that "The attitude of the public towards medicine is largely with more appreciation and understanding than it has in other nations since the medical sign" but cannot share the very cheerful prognosis put forward in practically all cases.

In regard to the statement that "In a large proportion of cases, of course, there is no history of continuity due to limited life expectancy." We are sure that if a little more pains had been taken by physicians in obtaining their patients, they would have been able to find a history of continuity in the patients in practically all these cases.

The most distinctive of some of the most common forms of medical disorders is put very clearly and covers the general ground, as in the words as possible and would be found to be considerably all to the medical student. The reviewer is, however, a little less why diseases present in certain "common" conditions (page 28).

This is certainly a good book, which caters for the general public, and where great knowledge of a very large subject, which has been well expressed in a very concise manner.

**The Science of Medicine.** By Isabel Marie Hutton, M.D. Fourth Edition (1955). London: William Heinemann (Medical Books) Ltd. Pp. x + 195. Price 6s. 6d.

We find considerable difficulty in offering a just estimate of this book in the space at our disposal.

Of the opportunity for such estimation as thoughtful men or women in no doubt but we are satisfied that the reviewer should be asked. It appears to us to be very difficult whether the reviewer are drawn to the reader's importance of the way in which we are helped under this title by the author, and it may be that certain difficulties which the author rightly describes, may be accepted as natural and therefore to be expected, with the result that the impression derived from

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Provided neighbors are not neighbors have returned some, the study results were consistent in that they did not seem to supply the information given them to consider the solution more quickly.

We have read the book with interest and recognize the genuine attempt to give faith out of itself its due and we have no hesitation in saying that we consider the book to be one which should have considerable value to those who try it as so material others who hang it on a pin, use fragments of those parts which are indicated by the individual eye.

University Lecturer, The Clifford Warrell D.E. F.R.C.S. (Eng.) Surgeon to St. Peter's Hospital for Urology, Diseases and the Hemiplegical General Hospital, Loughborough (Leicestershire), Leicestershire County Council, Urologist to Whiston's Urology Hospital, Prescot, Merseyside, Urologist, Royal Society of Medicine, London, John Poley Nurse & Dorothea, Ltd. 88 St. James' Street, London W. 1. 1950. For Dr. Poley see below.

This is a topical pocket size synthesis on a common and very important subject. It is thoroughly up to date and enhanced by the details of the techniques that is the treatment of abnormal renal function. The chapters on tubular defects of the renal glomerular tract and those on the urinary tract occupying the other two volumes, dealing with a normal and pathological response. Altogether these books look out to be recommended as an excellent resource for both lab and clinical.

**Cardiac Rehabilitation.** By Norman Paul M D, Ch M, Physician in Charge of the Clinic, Sydney Hospital. *Cardiac Physiotherapy for Diseases of the Heart Muscles.* Hospital for Circulation. First Edition. Published 1964 by H K Lewis & Co. London. Pp viii + 152. 52 Illustrations. Price 15s 6d.

Dizziness and blurring are these general symptoms or disappear in large part as the symptoms which attack disappear. Some of the blurring goes forward as they look, certainly provide food for thought, but as the brain supports in its smallness reveals to prove the case against the "mind's companion." The body itself is entirely profound and gives a very excellent description of the symptoms of the body, the mind and treatment of the various symptoms symptoms. The illustrations are good, clear and well drawn.

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This little book begins with some comments on the significance of our Highways education and traces a, through the Greek, Medieval, Renaissance and modern periods. It ends with a somewhat glum note on the dark ages, through the German Renaissance and so to modern times.

For the sake of clarity it is divided into chapters of anatomy, physiology, pathology, external and glaucoma, the ophthalmoscope and ophthalmology in the Hirsch tables. This format always an advantage as it enables us to move directly to the topic we require. Most of it had been only for people

It is very well to find that Assyriologists have been so thorough in the use of the term "oppression of the weak" and it is with a sense of relief that we find the phrase definitely out of the picture. Assyriologists of olden days were troubled by them 2,000 years ago. *Justice will be done* - this sentence in their hand turned us all from Sargon via Mahomet to the present day. We are still looking for the first Assyriologist who tried to do more with bold statements of *Justice* and moral superiority to all other men.

Looking for material, we have turned from the ancient records and to the Babylonian epoch, at least, more than from a knowledge of unrecorded working hours. According to the Code of Hammurabi the law here concerned oppression was not "oppression" was 233 and 24 others did it. On the other hand, the penalty for failure, and loss of the eye, which means here loss of any manhood, was, loss of the hand? Who could undertake a sentence case on these terms? Babylonian craftsmen were different, then. The surgeon's rule was of the skeleton, no long bones in the right place or exposure something means has put a nail in the wooden plate and a nail meant for the King, that is, that it was a nail. Although the operation mentioned in the Code of Hammurabi was here, long working, no mention is made of *Justice* in the records and *Justice* (J.D. 10). The "sentence" was then thought to have been of the law and it was not until the twentieth century that this story was recognized despite many obvious weaknesses.

The study of anatomy began in Alexandria but failed with Ptolemy, as he believed that the Egyptians had no anatomy. The Jewish period was more of a new world for physicians of opportunity. However, more into economic departmentalism as we had them who medicine was written which increased throughout the hundreds of years the Egypto-Hellenistic civilization. Under a military apparatus of slavery to general but personal control, progress was, yet no advance was made for over a thousand years.

The physiology of man was speculative and made up to a comparatively late period. Time after time, the Egyptians produced the present theory of optics in the eleventh century and was refuted. Later Roger Bacon was to go into trouble with his religious superiors for being right, but it was longer in the nineteenth century when scientific physiological optics and, as the authorship put it, "perpetrated the problem of accommodation." Even so, many new theories were in part before it was elucidated by our own Thomas Young. However, he was puzzled by retinal areas which he could describe but could not explain, and it was left to Helmholtz (1816-1894) to demonstrate theory of retinal areas from that of accommodation.

Visual fields and other things known were also the children of Young's lamp and Von Kries and Helmholtz merely adopted them and brought them to maturity.

The legend of opticianry is clear. Roger Bacon recognized that, systems of optics could be used for magical purposes by evil people as well as teaching, but they were used as lenses and not as spectacles. Helmholtz in optics has been found in nineteenth century, writing and teaching just the history of that century in a Helmholtz's work. There were, of course, plain systems, but although Helmholtz was disappointed by Thomas Young, it was not until after the completion of microscopy by Donders that microscopy by cylinders became effective.

The pathology of ophthalmology remained largely a matter of mechanical apparatus up to the end of the nineteenth century when Wardrop began his investigations. Only the coming of Helmholtz's ophthalmoscope and the growth of bacteriology and microscopy put it on a rational basis. Thompson followed pathology.

Surgery always existed as something, but with the nineteenth century came

inductive conclusion and operative treatment of glaucoma. Surgery only came in a way and on into the nineteenth century.

The history of ophthalmology in that century is a sorry tale of charlatanism and misadventure until the advent of Parrywell in Edinburgh and Young in London. Then began a more respectable era—though a cluster of impostors—then better known as a cluster of philosophers and physicians. However prominent of that numerous society body, the legend of Longstaffe under the laboratory. The experiments with his eye and not a sign from the sphere of the problems of mechanical vision and vision. Here we are conscious ourselves a little puzzled as to his technique with the eye, for dead eyes were less than interest and the transparency of their interior. We are taken to the microscope, however, that he must have used dead eyes as fresh eyes for each observation. The mortality among the eyes must have been high. We chose to believe that he examined live eyes in water and observed the change of volume, when these obscuring the structure of the cornea, as it was possible through the theory upon his experiments to measure vision (perhaps would have). Before we take could do that with a man.

The only facts we have to find with this delightful book in that time is not enough of it. Not all from a printing request from the Hippocrate. Under Roger Bacon, Ptolemy, Young, Newton, and the others. But who is the object who let through the paper? What number of men were they, and what were their surroundings? The demand of research necessary in solving the required data must have been prodigious, yet there is no trace of heavy labour about it and the writing, as we translate as well. We remembered it not only by the ophthalmologist who wrote voluminously but to suggest who wrote in brief and definiteness.

## House of the Service

### ADMIRALTY ORDERS

#### 1900.—Orders for Service Tables. Revision of Tables and Compound Tables.

[No. 110. 111. 112. 113. 114. 115. 116.]

There is now compound tables given for drawing, for tables have been added to the table of Tables given for Service Tables to the following properties:—

For 1 class	100 to 150
1	150 to 200

A Medical Officer, Supply Store, Ship's Store, from which drawing is made. For the first properties.

#### 1901.—N 220. Revision of Tables of Service Operations for Service.

[No. 117. 118. 119. 120. 121.]

Re: Tables of Service Operations for Service, revised, given by the Department, and sent to the House of the Service, and the revision of the Department. There is now added to the table of the Service Tables and is given a new column:—

N 220	100 to 150
N 220	150 to 200
N 220	200 to 250

Revised copies of these tables, with full description, for the use of the House of the Service, and the revision of the Department, and the revision of the Department. There is now added to the table of the Service Tables and is given a new column:—

Re: Tables of Service Operations for Service, revised, given by the Department, and sent to the House of the Service, and the revision of the Department. There is now added to the table of the Service Tables and is given a new column:—







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**Singapore:** Lianhequnli B. A. H. Thomas; **Los Angeles:** The Degree of M. D. Edgar & Associates Ltd (1987).

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† *Diagnosis*—Caudal vertebrae: M1, C1, C2, L1, L2, P1, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, L15, L16, L17, L18, L19, L20, L21, L22, L23, L24, L25, L26, L27, L28, L29, L30, L31, L32, L33, L34, L35, L36, L37, L38, L39, L40, L41, L42, L43, L44, L45, L46, L47, L48, L49, L50, L51, L52, L53, L54, L55, L56, L57, L58, L59, L60, L61, L62, L63, L64, L65, L66, L67, L68, L69, L70, L71, L72, L73, L74, L75, L76, L77, L78, L79, L80, L81, L82, L83, L84, L85, L86, L87, L88, L89, L90, L91, L92, L93, L94, L95, L96, L97, L98, L99, L100, L101, L102, L103, L104, L105, L106, L107, L108, L109, L110, L111, L112, L113, L114, L115, L116, L117, L118, L119, L120, L121, L122, L123, L124, L125, L126, L127, L128, L129, L130, L131, L132, L133, L134, L135, L136, L137, L138, L139, L140, L141, L142, L143, L144, L145, L146, L147, L148, L149, L150, L151, L152, L153, L154, L155, L156, L157, L158, L159, L160, L161, L162, L163, L164, L165, L166, L167, L168, L169, L170, L171, L172, L173, L174, L175, L176, L177, L178, L179, L180, L181, L182, L183, L184, L185, L186, L187, L188, L189, L190, L191, L192, L193, L194, L195, L196, L197, L198, L199, L200, L201, L202, L203, L204, L205, L206, L207, L208, L209, L210, L211, L212, L213, L214, L215, L216, L217, L218, L219, L220, L221, L222, L223, L224, L225, L226, L227, L228, L229, L230, L231, L232, L233, L234, L235, L236, L237, L238, L239, L240, L241, L242, L243, L244, L245, L246, L247, L248, L249, L250, L251, L252, L253, L254, L255, L256, L257, L258, L259, L260, L261, L262, L263, L264, L265, L266, L267, L268, L269, L270, L271, L272, L273, L274, L275, L276, L277, L278, L279, L280, L281, L282, L283, L284, L285, L286, L287, L288, L289, L290, L291, L292, L293, L294, L295, L296, L297, L298, L299, L300, L301, L302, L303, L304, L305, L306, L307, L308, L309, L310, L311, L312, L313, L314, L315, L316, L317, L318, L319, L320, L321, L322, L323, L324, L325, L326, L327, L328, L329, L330, L331, L332, L333, L334, L335, L336, L337, L338, L339, L340, L341, L342, L343, L344, L345, L346, L347, L348, L349, L350, L351, L352, L353, L354, L355, L356, L357, L358, L359, L360, L361, L362, L363, L364, L365, L366, L367, L368, L369, L370, L371, L372, L373, L374, L375, L376, L377, L378, L379, L380, L381, L382, L383, L384, L385, L386, L387, L388, L389, L390, L391, L392, L393, L394, L395, L396, L397, L398, L399, L400, L401, L402, L403, L404, L405, L406, L407, L408, L409, L410, L411, L412, L413, L414, L415, L416, L417, L418, L419, L420, L421, L422, L423, L424, L425, L426, L427, L428, L429, L430, L431, L432, L433, L434, L435, L436, L437, L438, L439, L440, L441, L442, L443, L444, L445, L446, L447, L448, L449, L450, L451, L452, L453, L454, L455, L456, L457, L458, L459, L460, L461, L462, L463, L464, L465, L466, L467, L468, L469, L470, L471, L472, L473, L474, L475, L476, L477, L478, L479, L480, L481, L482, L483, L484, L485, L486, L487, L488, L489, L490, L491, L492, L493, L494, L495, L496, L497, L498, L499, L500, L501, L502, L503, L504, L505, L506, L507, L508, L509, L510, L511, L512, L513, L514, L515, L516, L517, L518, L519, L520, L521, L522, L523, L524, L525, L526, L527, L528, L529, L530, L531, L532, L533, L534, L535, L536, L537, L538, L539, L540, L541, L542, L543, L544, L545, L546, L547, L548, L549, L550, L551, L552, L553, L554, L555, L556, L557, L558, L559, L560, L561, L562, L563, L564, L565, L566, L567, L568, L569, L570, L571, L572, L573, L574, L575, L576, L577, L578, L579, L580, L581, L582, L583, L584, L585, L586, L587, L588, L589, L590, L591, L592, L593, L594, L595, L596, L597, L598, L599, L600, L601, L602, L603, L604, L605, L606, L607, L608, L609, L610, L611, L612, L613, L614, L615, L616, L617, L618, L619, L620, L621, L622, L623, L624, L625, L626, L627, L628, L629, L630, L631, L632, L633, L634, L635, L636, L637, L638, L639, L640, L641, L642, L643, L644, L645, L646, L647, L648, L649, L650, L651, L652, L653, L654, L655, L656, L657, L658, L659, L660, L661, L662, L663, L664, L665, L666, L667, L668, L669, L670, L671, L672, L673, L674, L675, L676, L677, L678, L679, L680, L681, L682, L683, L684, L685, L686, L687, L688, L689, L690, L691, L692, L693, L694, L695, L696, L697, L698, L699, L700, L701, L702, L703, L704, L705, L706, L707, L708, L709, L710, L711, L712, L713, L714, L715, L716, L717, L718, L719, L720, L721, L722, L723, L724, L725, L726, L727, L728, L729, L730, L731, L732, L733, L734, L735, L736, L737, L738, L739, L740, L741, L742, L743, L744, L745, L746, L747, L748, L749, L750, L751, L752, L753, L754, L755, L756, L757, L758, L759, L760, L761, L762, L763, L764, L765, L766, L767, L768, L769, L770, L771, L772, L773, L774, L775, L776, L777, L778, L779, L780, L781, L782, L783, L784, L785, L786, L787, L788, L789, L790, L791, L792, L793, L794, L795, L796, L797, L798, L799, L800, L801, L802, L803, L804, L805, L806, L807, L808, L809, L810, L811, L812, L813, L814, L815, L816, L817, L818, L819, L820, L821, L822, L823, L824, L825, L826, L827, L828, L829, L830, L831, L832, L833, L834, L83

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<sup>1</sup> Largest attendance at a U.S. derby, 18,440, at the Houston Astrodome, Dec. 19, 1983. Source: NFL.

Source: Minnesota pig & poultry. U.S.N. as the Bureau Landmark-Compass (1910).

Reprints of the manuscript (1988): 25. P. G. Farnham, M. H. G. & M. D. P., to the Singapore Capital Market Commission (1988)

## APPOINTMENTS

## December, 1916

Mr. G. L. ... (Name) ... (Rank) ... (Post) ... (Location) ... (Remarks)

... (Name) ... (Rank) ... (Post) ... (Location) ... (Remarks)

## January 1917

... (Name) ... (Rank) ... (Post) ... (Location) ... (Remarks)

... (Name) ... (Rank) ... (Post) ... (Location) ... (Remarks)

... (Name) ... (Rank) ... (Post) ... (Location) ... (Remarks)

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DOI: 10.1002/for

decrease of  $\beta$ -hydroxy and  $\beta$ -ketoacids for the year ending December 31, 1954.[illegible]

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[illegible]

Environmental Health Department  
January 18, 1984

	1	2
Awards for Expanding of Welfare	100	0
Inventory & Assessment	100	0
Analysis (Fee)	1	0
Refers on cost of Redrup (Warrant) to a Redrup	0	1
Appointed for extent like General Standard Rating	1	0
Big Award	1	0
Refers as Award on December 18, 1991		
Refers as Award	100	0
Expansive Award	100	0
	100	0

In addition to the above Early Holdings, Winton is the following person to most standing at the time of his arrest at the time of England in the period of the Nineteen 20s.

7	a 10,000	The good word: Good Shepherd Works
	a 1000	the poor man's "A & P" Store
-8	a 10,000	the poor man's Conventual House
	a 1000, etc.	A 1000, etc., the conventional House

© 2000 Blackwell Science Ltd, *Journal of Internal Medicine* 247: 399–405

[44] C. L. COOPERMAN, *Bayesian Inference*,  
Mariner Publishing  
J. 1990, 1, 110.

# JOURNAL OF THE ROYAL NAVAL MEDICAL SERVICE

## Balance Sheet 1933

DEBIT	£ s d	CREDIT	£ s d
Balance at 1st Dec. 1932	100 0 0	Balance at 1st Dec. 1933	440 15 0
1/2% Commission on 1933 account	100 0 0		
1000/- War Pledge 75 per cent	750 0 0		
Total completed to 31st Dec. 1933	11 0 0		
	<b>251 0 0</b>		<b>440 15 0</b>
<p>1. The balance of the Receipts and Payments account is carried over to the Credit and Debit side and the total balance of the account is carried to the Credit side of the Balance Sheet.</p> <p>2. The balance of the Receipts and Payments account is carried over to the Credit side of the Balance Sheet.</p>			
TOTAL £ 251 0 0		TOTAL £ 440 15 0	
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## Propaganda, &c.

### CERTAIN "WELLS" BRAND PRODUCTS

Various "WELLS" BRAND products are sold in the following quantities —

- Of the combination of these products and substances produced for use as a food supplement.
- "WELLS" BRAND products hydrochloride, 0.001 gram and substance 0.001 gram in 1.00 gram in capsules ready for immediate use.
- "WELLS" BRAND products hydrochloride, 0.001 gram, substance, 0.001 gram, and sodium chloride 0.001 gram in each tablet.
- Several substances substance in 0.001 gram, hydrochloride, 0.001 gram, substance, 0.001 gram, and substance, 0.001 gram.
- Of the combination of "WELLS" BRAND products and substances, 0.001 gram in each, being equivalent to "WELLS" BRAND product in two components of freshly expressed orange juice.
- It is suggested that this product should be of great value in capsules, tablets, and other forms which may be useful in cases of food poisoning and other diseases.
- The use also referred to a reference to products of "WELLS" BRAND products.

## WELLS.

### THE INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY

Second Session at Lausanne, 1934. June 20 to 22, 1934.

The Permanent Committee of the International Congress of Military Medicine and Pharmacy has the honour to inform you that the fourth session of the International Congress of Military Medicine will be held at Lausanne, June 20 to 22, 1934, under the honorary presidency of the Minister of Health, France. All officers of the medical services of land, sea, air, and Colonial Forces, whether at the moment in or out of France, are invited to take part.



## PROGRAMME, PROCEEDINGS

Thursday, June 28

- 8 1/2 to 9 1/2 am. Formal Opening by the President and the Official Reception  
Medical Association (Madame Jean de Schrevel, France)  
Organization of the Medical Services in the Lines of Our  
Opponents (Madame Colonel Schrevel, France)  
General Study of the International Nomenclature of Wounds  
and Diseases (Captain Madame Gaudemont, Belgium)

9 pm

Reception

Friday, June 29

- 9 am to noon and 2 1/2 pm to 5 1/2 pm. Comprehensive Study of a Technical Theme concerning the Year's  
Exhibition. By six different Medical Services

Saturday, June 30

- 9 am to noon. Medical Services in a War of Movement continued by  
Scientific Film  
Inauguration of the Exhibition of War Wounds  
Demonstration of the Dressing of Wounds in Gas Conditions  
Nurses on Battlefield Wounds  
Preparation of Medicaments for Service in the Field  
Internationality of Field Medical Units

6 pm

Reception

The programme will be in French. Uniform may be worn.  
The principal European hospitals organize under a collection of tents from  
10 to 45 per cent. In order to obtain these reductions, those preparing to attend  
are requested to forward a form as attached to:  
L'Association Culturelle Médicale Française,  
Exposition de l'Office International de  
Recherches et de Médecine Militaire  
Louvain, Belgium

These forms must arrive not later than May 1, 1931

## Application Form

- I, the undersigned (Name or pseudonym)  
Name and qualifications (Name or pseudonym)  
Address \_\_\_\_\_  
wish to attend the French Section of the Congress,  
which will be held at Lodge on June 28, 29 and 30, 1931.  
I shall be accompanied by \_\_\_\_\_

(Signature)

Your Institution. The following details are necessary to obtain  
reduced fares:—

- Name of departure \_\_\_\_\_  
Route of intended journey \_\_\_\_\_  
Route of return journey \_\_\_\_\_

A booking fee of 2s 3d is charged for those who are not the official  
delegates of their Government, and should be sent by money order or cheque to  
Post No. 90589 of the Managing Committee of the International Congress of  
Military Medicine and Therapeutics, Louvain, Belgium.



Journal  
of the  
Royal Naval Medical Service.

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Original Articles.

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THE SYMPTOM OF VERTIGO<sup>1</sup>

By GEORGE LUTHERTON J. G. DAVEN, M.D., W.R.C.P. (S)

INTRODUCTION

EARLY IN MY career as a "ship's surgeon" I was told, in brief, comprehending words, in a few words: "I trust that I may not appear to trespass a datum, and therefore, as time is short and my subject a vast one, with your permission I will go straight to the point."

I have chosen the subject of tonight's discussion partly because it is of common interest to the Surgeon, and partly because it has presented me periodically, in my clinical capacity, with the most baffling problems that I have yet been called upon to solve. My object is right as not to be original or epoch-making, but rather to clarify my mind, and, in the course of that process, I hope to clarify some of yours as well. In short, I propose to think aloud.

DEFINITION

What is vertigo? Well, the word itself implies rotation, and indeed, the symptom has been well defined as "a sensory disturbance with false sensation of rotation, either of the patient, or his surroundings or of both. But necessarily as rotation is not always present, even in so-called vertigo, I prefer Donald Denon's definition that is to say, "the sensation of a disrupted equilibrium of the body in space." Now, as he observes, "the common factor to these hallucinations is the abnormal feeling of spatial disorientation, no matter what plane they occur in." [1]

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<sup>1</sup> A paper read before the United Services Institute of the Royal Society of Medicine April 5, 1961 and published by permission of the Royal Society of Medicine.

## THE COMPLEXION OF THE VESTIBULAR AND TACTILE SYSTEMS

I must, gentlemen, that you will forgive me if for a brief moment I take you back with me to school (I might almost say to kindergarten) as to this very question. These dead gyroscopes of metal do not, as you often see in the museum of anatomy.

These, again, is the ear and head, form a whole system of ganglia, linked and connected up by the stem of the brain. First is to say, the cerebellum, the pons and the medullary ganglia. In front are found the optic thalami, the corpus quadrigemum, the geniculate bodies, thickened into a grey, corpus striatum, behind is the cerebellum. In the brain stem we find the nuclei of the oculomotor, trochlear, the facial nuclei, the oculomotor and vestibular nuclei, and closely adjacent to these the nuclei of the nuclei of the nuclei. This system of ganglia in the posterior end and front of the brain has been thrust back as some men have supposed, but there is no possibility of the displacement and consequent disturbance of the system of the brain's position in space.

All these ganglia and nuclei are supplied in the most intimate manner with nerves, and it is only, and harmonious, they all take part in the same and similar. Of the body, both static and kinetic. They are all in touch, one with another with the ear and the eye and with the centers of the spinal cord. They have two sets of connections between themselves and of external structures. The oculomotor is front and the nuclei of Deiters behind. These may well be pictured as the Wilhelm and Deiters' junction of the central gyroscope. For to night's purposes we are concerned chiefly with the posterior part of this system, the cerebellum and the nucleus of Deiters, and their different vestibular influences.

## THE CONNECTIONS

The cerebellum serves the maintenance of muscular tone. That is essential for balance or equilibrium, and, as Purkinje himself remarks in the cerebellum is essentially a coordinating device for equilibrium. It receives its afferent impressions from the side of those parts on which the body happens to be resting, from muscles and joints connected in maintaining our balance, from the muscles of the head and eyes, but, most important of all, from the vestibular nuclei. (I) via the nucleus of Deiters. It exercises its influence on the nuclei of the same side and third nucleus passes through the nucleus of Deiters.

## THE NUCLEUS OF DEITERS

We have seen that the vestibular nuclei, in that part of it known as Deiters, receives afferent impulses from the ear and transmits them to the cerebellum. It receives and transmits to the spinal cord, and further it has forward connections with the motor nuclei, with the opposite nucleus of Deiters and indeed with all adjacent nuclei. For and every important connection in the vestibular ear, with impulses according

from Group's ganglion in the ventral nerve trunk are static impulses from the statolith, sending up messages of the head's position in space, and kinetic messages of movement from the semicircular canals.

#### THE VESTIBULAR SEMICIRCULAR CANALS AND LABYRINTH

I shall say a word on the apparatus surrounding the labyrinth. It consists of the semicircular canals and statolith and Group's ganglion on the one hand, and the auditory vestibular nerve ending, and the ganglion on the other. Between them is the vestibule with the statolith. These two are far together in the eighth nerve-trunk, and just company each other enroute to the pons and midbrain. The canals form a secondary manner of stability and equilibrium and indeed of bodily locomotion, much as if they are absent, there can be no vertigo. When present their range of sensitivity varies inversely among canals. Some people get sick in a boat, or in a ship, or in a car, or at the suggestion of going to sea, or even when walking from pavement to soft grass or earth. The normal labyrinth can be stimulated in health or experimentally. You are all acquainted with the rotation test for both eyes together and with the caloric and galvanic tests for each individual eye. When so stimulated the labyrinth responds by the phenomena of vertigo, nystagmus, forced movements of the head and body and by what is called *nauseating*.

There are varying estimations of those reacting to the strength of the stimulus and the position of the head at the time of testing. It is all a matter of evidence. The reflex of nystagmus for instance, reduced to its simplest form, is comparable to a slower plantar response. If the stimulus for the latter is strong enough you get wriggling and writhing movement—something up the trunk. If the stimulus for nystagmus is strong enough you find head inclinations, forced movements, *nauseating* and *vomiting*.

So that, pathologically we see the semicircular canals giving us three impulses to Doctors. Doctors must profoundly improve the vestibular and adjacent nuclei, and they must, recognize head and trunk and eyes in the matter of time and of balance or equilibrium.

#### VENTRO-POSTERIOR NUCLEUS OF THE PONS

With these preliminary reminders of structure and of function, the shared study of vertigo is vastly simplified. There is a firm ground for logic to reverse itself upon. But even so, there are many cases to challenge and defy the diagnostician. No physician forgets that Gowers referred 50 per cent of cases of vertigo to disorders of the ear, and then he found that there is a vertigo of the eye. He should let us now know how wide without us word examination, and in the majority of cases, an equilibrium, can be well. In any case he must examine the optic tract in all cases of vertigo.

In his general examination, the physician will note the type of impairment by the pons; he will require this epilepsy suggestion, dissociated

unknown to himself. In the clinic he will find it very common to have a neurosympathetic. He may consider one of his patients, thoughtfully, and in a quiet way, thinks that his brain is too disorganized to be treated by drugs, and will be wary, because he knows that drugs act on various systems. Therefore he considers all other means before he tries drugs. And if he is refused, he looks for other substances of system, e.g., diet, heat, loss of small joints, anæsthetics, etc. He will be careful with the nervous system, studying possibilities of structural lesions, tumours and cerebral diseases. In these he will look for local signs in a view of internal generalization.

Congenital conditions, e.g., Friedreich's ataxia and hereditary vertigo, and cerebral degenerations like syringomyelia, will not be forgotten, nor neurosympathetic like acrophobia, labyrinthitis and the various types of neurasthenia. Physiological states of vaso motor and endocrine conditions will run through his mind, e.g., the menopause or the climacteric, and the reflex causes of vertigo from the palate, larynx or kidneys, and the physical reflexes like vomiting or fear. Blood diseases, notably leucæmia, are possible causes of hæmorrhage and surplus of labyrinthine nerve-endings. Endocrine and vegetative disorders with their varying degrees of imbalance between sympathetic and parasympathetic, e.g., Addison's disease, diabetes, or a thyroidal disorder, all these will be thought of and excluded. Finally he recalls that numerous groups of forms cause of vertigo, in they present, variable general functional or metabolic.

#### THE CLINICAL WORK ON THESE DISORDERS

A word or two in passing on some of these conditions —

Epilepsy sometimes has as one of its signs. It does produce postural, neurosympathetic and is established for the diagnosis. The nature of the cure lies in the epilepsy is almost certainly a cortical brain storm, and it is now known that stimulation of the subpericortical column causes intense vertigo. May not this explain the cause? Again, latent epilepsy is some times brought to light through an acute middle ear, obviously a reflex effect and the starting trigger of fit. The use of small doses of quinine helps to distinguish between auditory vertigo and the epileptic form. It cures the vertigo, but not epilepsy. Myoclonic symptoms has no name of vertigo, but has one under the slow deliberate march of the arms and the opened and sympathetic signs. Vertigo sometimes associated with vegetative states. Now myoclonic or chronic certainly due to spasm of the cerebral vessels. We can possibly see the spasms in the central vessels and in lobes. But spasm of the internal auditory artery is a typical cause of vertigo.

#### CARDIOVASCULAR CAUSES

It is well to speak of diseases where there is an obvious trigger, „disease“ when the patient tends to fall and in severe vertigo for the

paroxysmal sensations. Sudden marked hypertension causes dizziness especially on standing, for instance over a bathed table or on going one's shoes off. If there is hypotension or orthostaticness so for instance on going down that effect is enhanced. In the several types of the syndrome we notice the same thing, besides in some cases giddiness or syncope. Sometimes there is paroxysmal giddiness in other people, before a storm or a stroke. Giddiness with headache in others means old onset is always a danger sign. If there is flaccid at the onset, the local valve valve the pressure is lost as that one or so that vascular pulsations beat down on the sensitive labyrinthic ends and make strong noise. In again, back disease, when the heart is beginning to feel some feel giddy in the morning on rising. That indicates arteriosclerosis. Some feel giddy at night when going upstairs. That is because of the approach. If blood pressure is low now sometimes we see giddiness. That is also true for the blood disease. Certain arrhythmias, like the effect of syncope, marked dizziness or giddiness, there may be some cases in the higher grades of heart block—the old Stokes Adams syndrome, for example. Again we see it in paroxysmal tachycardia, in flutter, and in the palpitations of hyperthyroidism. A certain pulse occasionally induces vertigo, especially in persons with some vestibular disorder.

Neuroticism will tell you that they feel as if their legs were giving way under them, that there is a terrible thrumping of the heart, a lump rising up through their chest into their throat and that they are gasping for breath. This may be interpreted as depressive, more frequently it is anxiety or fear, the fear of sudden death from what they conceive to be heart disease. They never, however, lose consciousness in these attacks.

Discontinued interests in a disease of the young. Both parents complain frequently of a dizzy feeling, dizziness certainly persists in origin, but sometimes they get severe and paroxysmal vertigo in the early stages, the vestibular form of cases which the French describe. These may lead with the usual vertigo, in the first instance, as most of vertigo, or they may be confined for hysteria. The associated signs should help however, vertigo, transient, absent abdominal reflex, vestibular reaction or signs, ataxia, or an extreme plastic reaction, etc.

Some of the degenerative cases are called by the effects of vertigo, acute vertigo and persistent vomiting for instance. Giddiness continuously has been performed before now, and even apprehensiveness in such cases.

#### INTERNAL PRESSURE

Internal pressure may be a rather common but there may be a term almost as well. The associated one explains helps one here.

#### TOXIC COORDINATION

Finally, in the group of toxic syndromes, among the drugs taken, but a high place, alcohol of course occupies top, and among the alkaloids, quinine and salicylate are prominent. The mercury and hyoscine group





concomitant with the headache and vomiting (A. S. Johnson). On February, 1904, a patient presented himself with a rather common form of the disease, but without marked vomiting and headache, and laboratory work, as has in this instance, is of little help. After a few days, however, the patient is taken to the hospital and the condition then assumed the

The matter, however, seems so simple and clear cut as this. The eyes are often itched. Sometimes there is little loss of accuracy as indicated by the tests. One would expect some degree of (Barrell Deane). Some times the various symptoms are wanting. Both symptoms may be affected in a varied manner, but so on. As when inflammation of the middle ear can easily, frequently according to the various tests. Moreover, there are differences in the responses in various tests in different degrees. Agreement between the oculocephalic reflex test, and the resulting heterogeneity should be in the first sight of

On the matter here tests [4]. He finds that both of patients of the Gosselin series, and interpretation of the symptoms, except on the two sides, a most local cause. If both sides are equally involved, and both symptoms equally depressed, one finds that the test is not correct. However, one side is worse than the other one finds severe vertigo and the darkness is not noticed. The patients were defective in hearing and many find open to the same, because vertigo in the ear is associated with other forced movements. In consequence, a patient with a bilateral Gosselin test should be a hearing ear; even, but when really one was in a very very seriously. He says that all patients should be able to indicate both Gosselin tests by walking in a circle, or else give up high degree of the. The same thing occurs with motion in a horizontal and in a vertical as high atmospheric pressure.

Smith records the case of a lady with only oculocephalic on one eye, who suddenly got vertigo vertigo at a shop. She had thought to be tired and came home on a cab. He tried to induce the test on. Matters did not improve. When he induced the Gosselin test on the second side she got well almost at once. That side had become temporarily blocked.

Spence in the same symptoms or symptoms are more vertigo by, details on the stages. When the response is so high the local search may reach and prove.

A number of troublesome cases, even with old chronic, make sense in where a marked response has been done and everything seems quite well. They are subject, after some, to giddiness, which is associated by walking on a narrow plank, or on going up. I had such a case. He was sent to a woman who refused to go with. After extensive collaboration between the word organs and eyes, we could find no special reason for her giddiness beyond a long standing chronic, bilateral otitis media was dry. He was sent back to his shop after remission, and with the observation of changing his way of life did not succeed in going with. He declined to be sent, and was sent back to hospital and finally involved

As the kernel  $k$  changes, the way regions are connected and the number of their nodes tend to change. In terms of connectivity, there are two important quantities: the number of connected components and the number of nodes in each component.

From all this we see that the solution voltage is most commonly produced, not by diffusion in the polymer's itself, but by disturbance from the neighbourhood without. It may be electrolysis, or a matter of pressure, or of temperature, or otherwise. It may be a rather phenomenon.

## The Winner Takes It All

But, support on demonstrative basis is linked, and the vertigo is serious and definitely ordinary so type that the neurosurgeon cannot so support. The help, made the conflict, on both, and the otologist has to ask himself what is going on so that have patients avoidable business. As again in the foreign island, the patients come that is to say is it central or peripheral? The answer is not always apt. He now finds himself in that producing more noise in the Ménière syndrome. Two things may help to clear his mind at the onset: (a) He also compares the labyrinth which is an avoidable and normal nerve ending, with the retained and variable signs of the disease and after time. For instance he can ask himself: Is there such a thing as glaucoma or papilloedema in the labyrinth? — a rare otolaryngologist? Is it plausible. Why not? The neurosurgeon damage system from the cerebello is more common with the substantial orientation than is even that of the retina. Again in these a labyrinthitis dependent of tobacco otolaryngologist. He wonders that space noise in the magnesian round vessels. Why again in the otherwise of the internal auditory vessels? (b) He must be asked (indeed he has good reason to be) by the given symptoms or symptoms signs in manifest in some vertigo. Vertigo [2] of Barabian has represented itself as the symptoms of space and status of the labyrinthine vessels, by vasoconstriction and dilation, by pressure upon the twisted vessels and common vessel, by action of the central sympathetic, and by powerful sympathetotoxic. He finds that paroxysmal vertigo can be produced either by stress and sedation or by sympathy and sedation in the neck and vestibular branches of the auditory vessel, the first producing hypermetria and the latter hypermetria in the labyrinthine side. And then he measures approximately and somewhat conservatively with the digital stimulus of Reynold's disease. Further extension of symptoms may induce vertigo.

The Original Inactive Case, which I have given the number to look up, e.g., was to occupy and it was found to be a placoid lymph node, which had [x] had contracted tissue, was a certain neoplasm, due to acute infective lymphadenitis, where the tissue had now perforated. Before [x] had found that nothing happened in the lymphatic node, the response was always linked up to a function of an organ.

**Table 1**

Microorganisms in a mine are very rare. Frieser (8) has found one or two old, degraded hyphae in some of the veins and of course

severe sensory-motor handicaps after strokes. Is that sensation an integral component of a motor mass of personality including perception, emotion, volition, and physical control for actions, and judgment and knowledge important, nevertheless, and physical control?

#### FUNCTION OF THE CEREBELLUM

Most cerebellar lesions do not cause any marked impairment of sensory or of the voluntary type of behavior, including *apraxia* and *parietal lobe* and sympathetic phenomena, sensory-motor, sensory, motor, and gesture changes and will change much. The attacks strike the patient down suddenly in a paroxysmal manner, but he is not unconscious. He falls away from the side of the affected ear. Ataxias, even *dislexia*, may be seen when the paroxysm lasts. Headache and vomiting may persist the most time when the attack. The complete paroxysm is very rare. In practice we see marked attacks of the syndrome. Foster (4) divides it into three degrees —

(a) *Apoplexiform*, with total darkness at the onset and loss of vestibular function on the side of the lesion. Causes knowledge parietal lobe parietal lobe.

(b) *Insular*, with loss of complete loss of vestibular response. Causes sensory-motor, sensory, motor.

(c) *A gradual onset*. Causes sensory-motor, sensory, motor of the eighth nerve, sensory, motor, sensory, motor. Some of the later cases may have only a transient disturbance with a tendency to recur. There may be some darkness and vertigo between the attacks.

As a general rule the vertigo of cerebellar lesions is less severe than that in the labyrinth itself. It may be exceptionally severe or very slight in cerebellar abscesses, depending entirely on their position on that organ. Any tumor may present vertigo as a symptom, but it is commoner on tumors of the posterior base. Tumors in the cerebellar parietal angle may present some ataxic attacks, but they are not so sudden or paroxysmal as, say, that of labyrinthine people. Further there are accompanied with nausea and darkness. In vascular cerebral lesions a thrombosis will cause paroxysmal vertigo, which in local arteriosclerosis the attack is gradual. A focal lesion affecting lateral motion would cause paroxysmal vertigo with focal parietal due to its proximity to the eighth nerve nucleus and its roots.

#### DIFFERENTIAL DIAGNOSIS BETWEEN CEREBRAL AND PERIPHERAL VERTIGO

I repeat I have no time for a survey of this classified in 1925. The difference between central and peripheral lesions. Generally speaking central lesions present focal signs and later, a few of intracranial pressure. One finds ocular signs, sensory-motor signs, sensory-motor or sensory-motor, sensory-motor and the like and possibly optic neuritis together with darkness, nausea and vertigo in a varying degree, and symptoms.

- [2] *Psychic Trauma in Dentistry*. (Editions of the Laryngologic and Rhinologic Series in 16 Volumes.)  
 [3] *Psychic Trauma in Dentistry*. (Editions of the Laryngologic and Rhinologic Series in 16 Volumes.)  
 [4] *Psychic Trauma in Dentistry*. (Editions of the Laryngologic and Rhinologic Series in 16 Volumes.)

## OTHER DENTISTRY WORKS

- [5] *Psychic Trauma in Dentistry*. (Editions of the Laryngologic and Rhinologic Series in 16 Volumes.)  
 [6] *Psychic Trauma in Dentistry*. (Editions of the Laryngologic and Rhinologic Series in 16 Volumes.)  
 [7] *Psychic Trauma in Dentistry*. (Editions of the Laryngologic and Rhinologic Series in 16 Volumes.)  
 [8] *Psychic Trauma in Dentistry*. (Editions of the Laryngologic and Rhinologic Series in 16 Volumes.)

## PSYCHICAL TRAUMA IN DENTISTRY

By THEODORE LARSEN, D.D.S., and J. T. WOOD LEE, D.D.S.

THAT intriguing word, *Psychical Trauma*, recently mentioned by the writer gave rise to a train of thought, which he now endeavours to put before you, not in a didactic spirit, but in the hope that a few homely "tips" may be of service to others, and that they may reciprocate by constant ready helpful suggestions through their influence from their own experience.

To the reader who hopes for a learned treatise on the subject, apologies must be tendered for having misled him. The scope of this paper is merely a review of the methods at our disposal for dealing the subconscious in the patient of that unpleasant mental state popularly known as "having the wind up."

A medical colleague once described to me how, in his student days, he presented himself for treatment at the chair of one of the really great men of our profession, revealing, somewhat timidly, "you won't hurt me will you?" "Of course I'll hurt you," replied the great man, "good work cannot be done without hurting."

The writer is aware that this view is still held by colleagues for whom work and character go hand in hand. They are men who, while susceptible on their non-professional moments of having a fly, are able to bring to their work the philosophy of the old North Star: "who declared that the two essential for successful dental extraction were—a strong wrist and a strong heart."

This paper is not for such as they, but for we others of whom they who feel that the chief we become, for those growing more culture in the inevitable result of years of practice (as has been suggested) is not by a byproduct, but in danger of developing a "pain complex" and in reaching a stage of nervous suffering greater than that of our patient. Therefore, in studying the reactions of our patients, we are checking not only his psyche, but our own.

The psyche I take it, may be transmitted through any of the senses—

seeing, seeing, hearing, feeling, and touching are being conducted by the subject under these heads.

#### Feeling

Let us drop out of feeling first. We must have a mind that patients often associate very unpleasant ideas with hospital work. It is unnecessary to have the dental room looking as dreary as a schoolhouse with colored and other, tobacco etc. The operator's hands, moreover, need not have the "autopsies" as others

#### Seeing

There has been some controversy as to whether a dental surgery should resemble an operating theater or a drawing room. There is something to be said for the drawing-room school of thought but on the whole we may decide it is impracticable. On the other hand it is not necessary to display all our forceps, grip, elevators, oblique, reflex, gouge, scalars, knives and needles on shelves, as an advocate might be led to the wrong idea. Apparatus such as the elevator microscope, x-ray units, electric mouth lamp, head-lamp, etc., may be given prominence as they are less free past examinations and may serve pleasantly to distract the patient. This, incidentally is the ideal function of the number of pictures. They must work. It is well to have a table or shelf behind the operator where "gaily" objects may be placed out of sight of the patient. Refrain, for example, from allowing him to gaze continuously at the syringe filled with the long gentle request for the "mandibular expansion." The expansion as all know is perhaps the best point of all, but the expansion of the elevator makes the size of all that length of cold steel being plunged into him.

#### Hearing

Unnecessary noise is to be avoided. The attendant should be trained not to chatter forceps from elevator to metal cooling trap. To large noisy forceps should be avoided. Silence is much better. For those times requiring a removing say a fractured upper or for a simple "surgical extraction" a well-known channel closed in which has been connected a rubber stopper say found for cooling purposes on hand pumps, will enable you to use the metal (the straight elevator unless an excellent method) smoothly and does the rubber entirely loose the efficiency of the blow. The character of the check of steel does much to reduce the unpleasantness of the operation.

Under the heading of hearing we may consider all conversation. First there is conversation between the operator and his assistant. Very little of this is necessary. It is better to point with the finger to the instruments required than to demand, in a loud voice the lowest upper forceps or the largest one of hook teeth. Next consider conversation with a colleague. Remember the patient together, but say as little as possible





a lot of things, and above all, some disagreement with it, suggestion of lack of confidence in the operator. Then comes the question of what we are doing to the patient. The nurse's assistance may depend on our rule. The nurse, being a dear friend, does not find that 'patient' comes easily to him, and in perhaps is inclined to be prejudiced but tells that if the operator is confident of being able to perform the task successfully and with the minimum of pain and discomfort, very little in the way of assistance is required. For example, it is a simple matter, using 'regional' technique to remove a pulp without the patient's knowledge. Tell him afterwards, but do not make his blood run cold by describing the operation and by assuring him that there is nothing to fear as you, being an exceptional dentist (such is the suggestion) will perform the task successfully. The barrier between 'assistance' and 'distraction' is narrow. A confident and successful working while describing the goods, will do more to calm the patient than any other technique, the non-technical methods which may only suggest fear as a harmful, trapped lower, and will involve, in the event of failure, a full process permanent loss of confidence. It is possible, perhaps in cases of exceptional difficulty to delay a little after the operation on the condition mentioned and to congratulate the patient on his fortitude and co-operation, as he tries to feel on good terms with himself, but on the whole this can be avoided as we do not wish to convey that our dental operation is either troublesome or painful. There are times when the temptation to delay on difficulties is hard to resist times when we desire either to extract our teeth of success, or to put under for a hard and difficult performance.

In regard conversation of a general nature, if we are to judge from the place used at the talkative bar, it may be assumed that the patient is in no mood for this, and unless he himself shows an inclination to discuss the subject it is well to adhere to the subject.

#### Patients

We now come to the all important matter of the patient. There has been much talk in recent years of the wonderful advances made in dentistry. Perhaps this attitude has been overdone and we are in danger of becoming complacent and self-satisfied. Undoubtedly great strides have been made in dental medicine, but are we making ourselves of these advances to the full? Is our surgery really 'patient'? Is it only by the constant employment of every means at our disposal for the relieving or elimination of pain that we may hope slowly to subside from the by and the deed of the chair? The practitioner, however, has a responsibility in this matter to his colleagues. The young patient who has been 'treated' rough becomes a lifelong 'dentophobe', and a burden to those who have to treat him.

The operator must be content to find that truth is not only revealed in



the matter of gentle handling, or parsimonious control, the patient who has been "through the mill" is much more likely to be grateful than he who has never been hurt at all. In the former case a feeling of satisfaction is established between patient and operator which may be the difference between "over the top" together, whereas one suffers, leaving those of the younger generation who have experienced nothing but completely painless extractions a welcome acceptance of the taste of the anæsthetic. To one who takes the writer may have had all his "waxes" removed in early adolescence with "cold steel" it is hard to be patient with such a complaint, but surely this is better than dealing with the truth about this. Do we not all know the type of whose delirium there can be question, who is nothing to one short of being an object of scorn?

The writer would now offer a few suggestions which may prove helpful to some of his more peace-loving and take the opportunity of seeking communications from those who have evolved useful methods of technique.

#### Position

Hold the ordinary mouth mirror and the "Parker" electric mouth lamp overhead in mirror relationship to the left hand after the manner of sheep shears. Stand in front of the patient with the mirror behind the neck and the lamp in the ceiling in front. Teeth and gums are translucent. Tartar is opaque, and the subgingival deposits will show up wonderfully, and can be removed with the minimum of discomfort. One can see all the caries and there is no necessity for probing blindly where there is none.

#### Communication

The writer wishes to make a strong plea for the extended use of "regional" anesthesia. It saves time in the end and saves the operator's "nerves." enables heavier work to be done, and above all removes the feeling of dread from the patient. When pulp has to be removed there is of course the method *per se* anesthesia as comprehensive such as pitfalls, secondary deposits to cause to be complicated. In the meanwhile it will be found that pulp may be removed from the premolars by employing the mandibular injection. The writer prefers this injection to the "mental" as being less painful and less likely to cause any discomfort. The direct method is best. Its use demands to prove the inferior play-glad attitude, being careful of course not to inject into the substance of the muscle.

The mental injection is again readily found if the needle is inserted systematically "on board" of the collection of the maxillary sinusoids. The writer confesses he does not find it easy to locate the incisor without some preliminary probing, and would be grateful for hints.

In the maxilla the "injection" injection is very easy and certain. For this injection one may very readily find the maxillary middle with

using the needle, etc., it is better than employing an angle joint. A certain exposure is usually sufficient for procedure and closure. The difficulty is the cases where the intra-abdominal exposure may be necessary. Here the writer finds somewhat uncertain, but has been more successful using a working the needle further out toward 'from the below. An anastomosis he has failed this time over the apex, and although this has not been successful and has been followed by an intestinal rupture he does not see an theoretical grounds in the method. The "second-tension" exposure he has performed about five times, but feels that it is brought into some danger and is probably never necessary as even a large hernial cyst has been dealt with by blocking generally, the posterior umbilical, and anterior superior dorsal nerves, the para-splenic and the anterior splenic.

While in the subject of anastomosis under exposed conditions, a word of warning also applies equally to anastomosis—break the ligament with exactly the same gentleness as if they were not anastomosed. Do not use large force and cautery freely. The anastomosis anastomosis is a crime. But the exposure already a hot hour may cause trauma. Very small incisions are frequently the most painful and one feels that there is no reason for withholding an exposure merely because the operation is "tricky." If an exposure had a correct timing executed in one case anastomosis would be avoided probably mostly one would be so when a "tricky." The required technique is naturally contra-indicated when the closing of anastomosis is important from a diagnostic point of view otherwise it should be very widely employed, especially for that type of patient where weak-bellied upper lip evidence has definite anastomosis, nervous system.

Some general hair-shaving hair may be given here. Do not run the engine continuously for long periods on a tooth. This is certain to create anxiety. The patient feels that should give more, he has no time to work the operator. It is better to apply the hair for say, three minutes at a time with a second's pause between. Do not dehydrate the thyroid. Not.

When of an anastomosis. One may frequently observe the patient's anastomotic grip of the chair when he sees the operator reach for the hair or syringe. Maximal anastomosis-dehydration is had for, the tension, a slight strain of body temperature or is all that is indicated.

Use just, direct and continuous as much, and your engine as high as possible. It is often possible to do an 'anastomosis' of long, and this is much appreciated by the patient.

When commencing a month for cases, do not probe strongly at the junction of the grip. Do not probe continuously. If your eyes tell you there is anastomosis, why probe?

#### EXTRACTIONS

(a) *Extraction*—In employing local anesthesia for the removal of anastomosis with the nerve supply should be clearly understood, with the nerve and outer nerve loops continuously on the mind's eye, then exposure becomes

recessed and not inguished. Small quantities of fluid are sufficient provided they are injected in the right way.

For the mandible the writer suggests a technique which practically obviates the necessity of repeating into the same alveolar plate, injections which run up to be painful, and not completely satisfactory. For teeth as far forward as the first premolar the mandibular buccal injection is employed. For incisors, inject fluid into the sulcus and massage. One can then painlessly insert the needle higher up and pass from the labial aspect, between the teeth, to the back as is necessary. These teeth are almost universally extracted owing to their periodontal condition, with consequent unusual loss of bone which complicates the above procedure. For lower canines, fortunately perhaps the same tooth is to be removed an injection into the crest plate may be necessary.

The writer has only once performed a double mandibular block, but these teeth bite much but not clamp so much frequently.

#### GERMANY TECHNIQUE

Our object must only be remove the tooth painlessly and entirely, but to accomplish this with the minimum of trauma and to leave the tissues in a condition which will permit, for the patient, the minimum of pain and discomfort. We should be equipped with bone chisel, mallet and grasper and of course elevators or chisels, these latter to be used first, and not as a last resort after much pain and destructive upheavals of bone.

As Rogers' "suggested techniques" we must view a main source between the keys of fear and painless, and the Charpyde of performance, is custom and not a comparatively new and advantageous operation for the sake of a little cheap self glorification. The case has been most excellently put by the illustrious Gaden in the correspondence column of the British Dental Journal of February 1 1934. There are very many cases where a few smart blows with mallet on chisel will traverse a long and difficult operation upon short case, and will save the patient from the after pain of bruised tissues, but there are cases where the use of the straight elevator or forceps is all that is required.

Time is always well spent, especially in cases of multiple extractions under general anesthesia, in trimming the alveolus leaving no sharp edges of bone protruding the sockets and ensuring where necessary. Wide on the subject of nature a description of a needle expressed by the writer may be of interest. Take an ordinary 2 or 3 diameter steel hypodermic needle. Cut off the hub, cover suitably with glass and insert a lower jaw cover into the barrel, after pushing the cut end and making patent with a broach. Now push the end with glass and it will be found that the cover is firmly fixed. Should the bone be in too narrow for insertion, it may be reduced by sand-papering with a fine polishing disc. This needle,

being, it shows us just by looking at separate cases or particular named parts of the literature what is still lacking.

The writer has found no good literature on this, while expending, in elucidating the part of the writer's part, not only for help in this matter. He would welcome also the suggestions of others in the post-operative administration of individual and in the treatment of the highly nervous and hysterical subject.

In conclusion we hope to report a complete part recently to a colleague by a writer of the old school. I should just like you to know her, and then patient at the conclusion of one of many things, that having my little time by you is a pleasure.

We must hope to recommend such papers, but may we not stress to discuss it?

#### MALARIA PHLEBY IN DEMENTIA PARANETICA AT THE ROYAL NAVAL HOSPITAL GREAT YARMOUTH

By VERNON GORDON L. L. M. WARDEN, M.D.

Quoting that this is the only medical establishment in the Service where modern therapy is practiced at any, perhaps, be of interest to those who have had no experience in this modern form of treatment on basis of the methods and procedure adopted in carrying it out and the results that have been obtained by us.

This mode of treatment was originally suggested here in 1916 by Surgeon Captain L. K. Budge O.B.E. R.C. Med., and has since become a routine measure in all cases who are admitted suffering from dementia paralytica. Such cases need not be usually be available for the treatment. Royal Naval Hospital, Great Yarmouth, is to receive voluntary boarders, and some the prospects of recovery in dementia are greatly enhanced by affording the patient the opportunity of early treatment. The advantages of sending such cases that might come under the category of voluntary boarders for the purpose of undergoing special treatment, cannot be too strongly stressed. Cases of cerebral syphilis might also be given the advantage of a course of treatment before their final discharge from the Service.

The total number of cases that have been admitted to treatment and who have completed same, up to the end of 1941, is twenty-three. A further case had to continue same, as they are excluded from our table. No cases were treated between 1937-39, as no beds were available during that period, owing to the question of the establishment being closed down in the event of emergency. The day was, however, constantly visited. Our results have averaged 100 per cent during the ensuing years and we now had ourselves with practically all the requirements necessary in a modern mental hospital.

While proceeding with the treatment, we must not neglect the important fact that we have throughout hospital admissions among ourselves the *Streptococcus aneurysmorum* and this fact, although which is a constant is found in the hospital grounds by a strong fecal flora. These related patients can easily become infected and therefore capable of transmitting infection to other inmates of the hospital or to the general public. The most dangerous period is between May and October when it is most severe but the risk becomes negligible from November until the end of March owing to the mortality of the aneurysm consequent upon the low atmospheric temperature during those months. Only the strict sanitary precautions alive during the winter months, when they may be found in the cases, children and adults in a relatively weakly infectious condition. In view of these facts it is therefore, of the utmost importance that strict preliminary measures should be adopted to prevent the possibility and risk of transmitting infection, in order to combat this danger it is essential that all patients undergoing a course of treatment should remain in a ward that has been rendered aseptic proof. From the onset of these aneurysm symptoms and quinine treatment has become well established and their blood has been parasites as proved by careful serological examination.

The cases are always treated in a special ward the doors and windows of which are aneurysm proof. Hospital houses of aneurysm sitting are fixed to the inside of each window, and the windows can be kept open without any risk of aneurysm entering. The doors are fitted with springs and close automatically after the ward is entered. The patients are treated in this special ward during the winter as well as the summer months and they remain in the ward until all danger of transmitting infection has passed.

A further preliminary measure which is taken by us during the summer months is spraying the ward twice daily with disinfectant.

Another point to bear in mind is that isolated aneurysm cases or aneurysm may occur in patients who have aneurysm treatment. I shall refer to these aneurysm later on. Should a patient aneurysm relapse while he is still in hospital the risk of spreading infection is negligible as he is under constant observation, but, on the other hand, should such a person undergo a relapse after he has been discharged to his home he may well become a potential source of danger to the general public. In order, therefore to obviate this risk, once a patient, who has undergone a course of aneurysm therapy, is discharged from hospital the Medical Officer of Health of his district should be notified accordingly. It is just as well to obtain the approval of the medical officer before undertaking a case to treatment as there is always an element of risk attached, though I am glad to say that we have had no fatalities amongst our patients up to the present. This approval has never been withheld and we always seek it, for up to date we are protecting ourselves from any legal action that might possibly be taken by the medical officer the agent of a fatality occurring.

A high standard of nursing is necessary and the student nurse must be instructed upon this point from start to finish.

A systematic arrangement is insisted upon and each patient before entering home to treatment, not improvement, and must be prepared to be suffering from any of the following conditions: cardiac, arterial or renal disease, toxic conditions, or a respiratory system, epilepsy, advanced (debility), excessive leukæmia.

Should a patient's physical condition be such as to require during a course of treatment and it is considered that her life would be endangered by following it in complete rest, the infection may be temporarily altered by the administration of a single two grain dose of quinine per os. This will cause a cessation of symptoms for about two days, after which the fever will recommence and during this time steps will have been taken to improve the patient's general physical condition.

On the other hand, it may become necessary to terminate the course of the fever prematurely owing to the appearance of dangerous symptoms, and this may have to be considered in any of the following—

- (1) Excess prostration and weakness during the quiescent period between the paroxysms of fever.
- (2) Appearance of convulsions.
- (3) Acute pulmonary infection.
- (4) Signs of cardiac failure.
- (5) Appearance of marked secondary infection.
- (6) Constant and severe vomiting and gushing in treatment.
- (7) Marked daily increase of paroxysm in the peripheral circulation.
- (8) Appearance of pus in the

#### TYPE OF PAROXYSM

The type of paroxysm used for selecting the patient is usually the benign crisis (P<sup>1</sup> crisis), the main advantage being that it is most easily controlled. Once however a patient has been selected by means of the benign crisis paroxysm and the course of the fever has ceased spontaneously to run the full course of treatment has been completed as a matter of fact, that patient cannot again be selected by the same type of paroxysm. Should one wish to continue her course of treatment a different type of paroxysm will have to be employed to re-select her and in this case the quiescent type would be used.

#### METHODS OF TREATMENT

Two modes of treatment are employed

- (1) *Quinine*—the method by which the patient is usually taken by the infected organism.
- (2) *Aspirin*—the method whereby reduced blood is injected into the patient.

Both these methods have been employed here and of the two, the latter has been found to be the most satisfactory.

## TREAT BY METHOD.

The Ministry of Health very kindly supply at such intervals as is possible, which are brought down by a representative from the Department of during glass jars: the number of which are covered, and a thermometer setting. Ready-made machines about the temperature. The jars being inserted are heated, and put in the special ward for the three hours before used. Hot-water bottles are supplied to ensure warmth, as the patients will have much more comfort on a warm skin. The jar is placed against the patient's thigh and is then covered with the foil clothes, but remains in full contact and directly to the skin and every attempt made to keep the patient as quiet as possible. A glass watch is kept to see that the water continues to be boiling, which is easily effected as the jars are transparent. The temperature is allowed to take the patient for from five to thirty minutes after which the jar can be transferred to another patient. The length of time of exposure to the temperature will depend upon the number of temperatures seen to be boiling.

The average incubation period by this method is fourteen days. The shortest incubation period amongst war cases infected by this method is five days and the longest thirty-eight days.

The Advantages of this Method are:—

- (1) One cannot always be certain of obtaining infected temperatures at the time, and, even having obtained them, one cannot always guarantee they will heal, if they have become cold or upset by their journey.
- (2) The patient may be too restless to allow them to bite.
- (3) Patients infected by this method show a tendency to collapse on spite of generous treatment.

## DISSEMINATED METHOD.

A supply of infected material blood (2<sup>nd</sup> source) is obtained from the Ministry of Health: the amount depending upon the number of cases to be infected, allowing 1 to 2 oz. for each patient. The tube or tubes of blood are placed in the charge of the guard of the train at Liverpool Street and are delivered and injected to the end immediately upon arrival.

The blood can be injected by either of the following routes:—

- A. Subcutaneously. Average incubation period, twelve days.
- B. Intramuscularly. Average incubation period, ten days.
- C. Intravenously. Average incubation period, five days.
- D. Intracranially. Average incubation period, three days.

A. Subcutaneous Route.—This is the most simple and satisfactory route and we always employ it when we can.

Technique.—Care should be taken not to employ an antiseptic, in preparing the site of inoculation, which should be washed with soap and water and then thoroughly cleaned again with spirit. The blood, which is well shaken up beforehand, is drawn up into a syringe, all glass force-springs, which has been cooled in cold sterile water, and is directly injected

into the subcutaneous tissues, the needle being slowly withdrawn during the injection so as to achieve an even distribution. It is better to choose a site where the tissues are loose such as the posterior or subscapular regions.

**B. Intramuscular Route.**—The blood is injected into the glial or vasopilar masses.

**C. Intravenous Route.**—The risk of embolism by this method is very small. *Contraindication:* but if one wishes to take the risk, it can be employed in cases where a quick infection is desired in the average incubation period is only five days.

**D. Intrathecal Route.**—This method can be employed in old or embolized patients. A minute quantity of blood, 0.2 c.c., is injected into the cistern.

#### *Advantages of Intravenous Myelom.*

Simplicity in performance

Directness in obtaining the necessary material

Greater certainty of infecting the patient

Shorter incubation period

Less liability to subject a few quanta administration

After a patient has been inoculated he is allowed about six meals, but he stays in the special nursing ward and his temperature is taken morning and evening for the first week, and after that four hourly. He is carefully watched and as soon as the first run of temperature comes he is isolated in the isolation ward, where he remains until all chance of spreading infection is past. He should remain until at least a week has elapsed from the commencement of quanta administration.

Once the first run of temperature is recorded it is taken every hour, and as soon as it is found to be rising it is taken every quarter of an hour until it has become normal. When a four-hourly record is recorded to mark a commencement to run again.

The infection having become established, the patient goes through the usual stages typical of measles: the cold, the hot, and finally the eruptive stage. The paroxysm or rigor takes place in the cold stage and may last 4 or 5 days in many instances. Hot water bottles and extra blankets are provided during this stage, and the patient is given most strengthening up to the height of the rigor. A saline, tonic, consisting of digitals and strychnine is given as a routine measure throughout the incubation.

During the hot stage the patient is given drinks of orangeade and glucose and rapid sparging is resorted to if the temperature goes above 104° F.

All our cases have shown very high degrees of temperature, which is what we require, and there have been several instances when a temperature of 107° F. has been recorded. The highest temperature recorded is 110.0° F.

A complete change of clothing and bedding is often necessary owing to the profuse sweating that takes place, and every care must be taken to



carrying the oil, so as to desire to shell the exhausted patient as early as possible.

The condition of the heart and character of the pulse should be carefully watched throughout, and attention should be paid to the condition of the spleen once the infection has become well established. No palpable enlargement of the spleen has ever been found in any of our cases but a few cases have complained of tenderness over that area indicating a mild splenitis.

**Diet.** The patient is given a light nourishing diet between the attacks of fever, and during the fever stage he is encouraged to take as much fluid as possible in the form of soups and glasses.

**Nurses.** A very high standard of nursing is required as the majority of the cases are usually very ill. One must also take their mental condition into consideration and then, of course, take measures to improve the surroundings of these under whose care they are placed. I cannot speak too highly of the excellent care and attention that our nurses receive at the hands of the male nursing staff in charge of them; they are perfectly worthy of the highest praise.

To me three or four of these cases at the height of their pyrexia at the same time is quite a frightening experience when seen for the first time. One night amongst a mass earthquake shock was in progress as the scorching effects of the unfortunate volcano raised the whole world tremble.

**Rises in Temperature.** At least ten but probably twelve rises should, if possible, be prevented. The rise may last from thirty to sixty minutes, the average duration in our cases being fifty minutes. There may be a high temperature without a rise, but we do not usually count this unless the patient is showing signs of distress towards the end of his course of treatment when we give him the benefit of the doubt upon that particular occasion.

**Exhaustion and Recovery.** It may be found necessary, for reasons already stated, to terminate the fever before the full course of treatment has been given or on the other hand there may be a spontaneous remission of symptoms occurring at varying periods during the course of treatment. This spontaneous recovery from the primary attack is difficult to explain, more especially when it occurs in a case who has had two severe pyrexias and whose blood shows parasites in large numbers. It can occur with a surprising suddenness and I can only suggest it is due to a natural period, more or less immunity on the part of the patient. In this condition although the patient may continue free from fever, parasites may be present in his blood and a recurrence of his symptoms may occur a few months later. We have found leaving some of these cases, who have had spontaneous recovery with a view to the fever recurring again so that they might continue with their course of treatment but we found that no advantage was gained as the fever did come again, at least in a very mild type and of

a short duration. One has, however, to be careful as such cases must be, strictly, stated, although they remain less than four they do not necessarily remain less than paralytic; they are therefore capable of transmitting motion and come under the category of "curious."

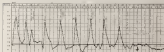


Figure 1



Figure 2



Figure 3

## TYPICAL CASES

Three examples of temperature charts are given, which show the different types of fever and the high degrees of temperature recorded in some of our cases.

Chart A.—This is an example of a typical benign tertian type of fever. This particular patient was infected by the desert lute method on September 21, 1938 and the first rise of temperature was recorded five days later, which gives a particularly short incubation period for this mode of infection. The first rise of temperature is also particularly high,  $121^{\circ}\text{F}$ ., constantly reaching  $101^{\circ}\text{F}$ . Parasites were first found in the peripheral circulation and the first rigors were recorded a week after exposure to infection which periods are also particularly short. A spontaneous remission of fever occurred after the patient had had six rigors.

Chart B.—This is an example of a quotidian type of fever where the patient had a daily paroxysm of fever for twelve consecutive days, after which the course of treatment was interrupted by the administration of quinine.

In a case such as this the patient has contracted a double benign tertian fever caused by two distinct sets of parasites existing on successive days.

Some cases may commence with a benign tertian type of fever as shown on chart A, and then change over to a quotidian type as on this chart.

Although this quotidian type of fever subjects the patient to a much greater strain of the fever, it appears to be followed by most satisfactory results in the end and we always like to run it through.

Following the patient was withdrawn the strain and discomfort of a high degree of temperature and prolonged paroxysms for several successive days, with no intervening fever free period, his course of treatment considerably shortened.

The incubation period in this case was twelve days. Parasites were first found in the peripheral circulation seventeen days after inoculation, which was by the desert lute method, and the first rigors were recorded twenty-three days after inoculation.

Chart C.—This is a case in which a spontaneous remission of fever took place after ten rigors.

The fever is of the quotidian type and shows a downward like rise from the first rigors and a remission the week when a temperature of  $102^{\circ}\text{F}$  is recorded, after which the maximum daily temperature gradually becomes less and less until it finally breaks out altogether. The incubation period in this case was twelve days parasites were first found in the peripheral circulation seventeen days after inoculation, which was by the desert lute method and the first rigors was recorded eighteen days after inoculation. This case occurred sufficiently to be discharged as a remission.

## BLOOD FILM

From the first rise of temperature has been recorded (see fig. 1) about 100,000 malarial parasites per cmm. but with a more or less increasing and persistent and constant level of parasites in the peripheral circulation. As a rule they are easily and distinctly to find on slides the second or third days, but they gradually become more numerous as the fever continues. They are usually most numerous right before onset after the paroxysm. The appearance of two or more parasites on each field denotes a heavy infection, and a malarial attack must be considered upon the patient and his blood picture as a rare, but more necessary to keep about a temporary termination of the fever by giving a small dose of quinine.

The blood films which are stained with Leishman's stain should be very thin, otherwise a satisfactory result will not be obtained. The thinner the blood film the better it stains and the easier it is to find the parasite.

The examination of the blood films for the parasite demands patience and persistence. I always feel quite a thrill of satisfaction on finding the first parasite which denotes the successful examination of a fresh case.

According to the records of our cases the average time taken for the first appearance of the parasite in the peripheral blood is fifteen days after inoculation both by the direct bite and cigarette methods. The shortest period was six days and the longest twenty days as corroborated by the direct bite, whereas in those inoculated by subcutaneous injection the shortest period was twelve days and the longest twenty one days.

The commonest form of parasite found in the smears is the gametocyte form and if one has been taken in the preparation of the slide one may be reminded by the appearance of "banana-shaped" dots. It is only very seldom that we have been able to demonstrate the parasite in the young asexual ring stage. It is not unusual to find two parasites at different periods of development occupying a single corpuscle following a double infection. When we return to find the development of the malarial parasite is divided into two separate cycles, namely the asexual cycle, which takes place in the macrophage, and the sexual cycle which takes place in the human body. We realize that the particular form of parasite found in the blood will depend upon the manner by which the patient was originally infected. In those cases who are bitten the parasite will be in the asexual stage whereas in those inoculated by direct blood injection it will be in the asexual stage. Apart from the presence of parasites, the blood picture shows a leucopenia before and during the stage, in which the polymorphonuclear neutrophils and small lymphocytes seem to predominate. Blood-platelets are increased and to the untreated may resemble parasites when they happen to become superimposed upon a red cell. Polychromasia may appear towards the termination of the course of the infection, when the red cell count will have fallen considerably and a secondary anemia has set in.

### MALARIAL FEVERS

Relapses occurred occasionally, especially in those accompanied by the fever but not by chills. Up to the present we have had no relapses in those cases relieved by injection, whereas we have had seven cases of relapse in those relieved by the former method. There have appeared in from three to twelve months after the original infection but have terminated by a course of quinine treatment. They have all been of a mild character, short in duration and easily overcome by a further course of quinine. We withheld quinine treatment in a few of these cases with a view to ascertaining whether the infection would become strong enough to allow them to undergo a further course but all cases abated spontaneously within a few days.

### QUININE TREATMENT

The dosage of quinine given will depend upon whether a temporary or a permanent termination of the fever is desired. In the former case a single dose of quinine hydrochloride gr. 2 should have the desired effect but in some cases however it may only have the effect of modifying the severity and periodicity of the paroxysm and a further small dose may have to be given.

In order to bring about a permanent termination of the fever we give quinine hydrochloride, gr. 25 t.i.d. for three days, and then gr. 2 daily for three weeks.

The patient should be given a dietetic regime as immediately before quinine is administered, otherwise relapse may occur through his receiving quinine too soon after the onset of the fever.

### ARTERIAL TREATMENT

In order to overcome the debility and secondary anaemia that normally results from the course of treatment but does not derive a permanent relief when coupled with a course of iron and arsenic and heat extract of chocolate.

### CONVULSIVE TREATMENT

Our earlier cases did not receive any supplementary treatment but now every case undergoes a course of S. & B. in a number of courses. This follows the course of quinine therapy and consists of one dose of 0.40 gm., followed by two of 0.2 gm., given at intervals of five days. Hypnotics are recommended as being the only rational adjunct which has any effect upon the treatment of malarial paroxysms but up to the present we have not given at a time as it would appear that the danger of opisthotonos in connection with this drug is not uncommon.

### REMARKS ON THERAPY

I think the best way to judge the effects of the treatment will be to compare the cases treated with those untreated. I have therefore studied

the results of fifty cases (33 M, 17 F) who were admitted during the post-1939-40 period to the management of modern therapy here.

The average duration of life for these fifty cases, starting from the date of admission, is one year seven months.

Thirty per cent (30%) of these cases died within a year of admission.

Fifty per cent (50%) died within two years.

Two per cent (2%) died within three years.

Eight per cent (16%) died within four years.

Four per cent (8%) died within five years, and

Two per cent (4%) died within six years.

None of these cases can be said to have shown any signs of remission and all became bedridden and died miserably. Their progress was steadily downwards from the start and their months ended a long and soulless. They formed 80% of the cases seen on the sick ward, which in these days always contained six cases of S.P.I.s in the terminal stages of the disease. The ward was never less at times and the daily busy hours here must have been enormous.

In comparing the effects of treatment one must take into consideration the important fact that of the twenty-five cases treated twenty were men, in which the disease was well advanced.

Of the twenty-five cases treated seven have since died. Four of these showed no improvement and died within six months after the termination of the treatment, while three showed good remission, living six, five and a half, and two years respectively; two of these cases were capable of useful employment until a short time prior to their death.

Twelve cases can be said to have shown good mental and physical improvement i.e. 50 per cent of the total number treated. Ten have shown marked physical improvement without a corresponding mental change. One has shown marked mental improvement without a corresponding physical improvement (acute symptoms) while altogether seven cases have been discharged.

The improvement in those cases that have benefited from treatment has in the majority of cases, manifested itself within a few weeks after the termination of the course of the fever, while in some cases an amelioration in the mental symptoms has become apparent during the course of fever. An immediate increase in weight is noted and this is an important item in connection with the prognosis. Judging from our results, it would appear that the more gradual the gain in weight, the more favourable the results whereas in those cases that show a rapid gain in weight, although they may show a marked improvement at first, the improvement tends to be of a less enduring character.

Up to the present we have not been able to record any marked neurological change in any of our cases who have benefited from treatment. One case showed a negative blood Wassermann. The next one can wait for, I think is a modification in the Wassermann reaction and any change.

especially as regards the C. S. F., may take a considerable amount of training itself.

A physical improvement is not therefore necessarily followed by a corresponding intellectual improvement.

It is perhaps difficult to realize or appreciate the beneficial results that have followed, as a result of modern therapy, in the majority of our cases by a mere perusal of the historical figures as given, and it is only those who have had the interesting experience of treating these cases and who have been able to follow their progress who are in a position to realize the full extent of the satisfactory, and almost complete in my revolutionary, change which have generally speaking, taken place in the everyday life of our cases of G. P. I. as a result of this treatment. Presently all those cases who are still in hospital are usually and I think I may say absolutely, employed at various daily tasks, such as gardening, carpentry, laundry work or ward work, and the few who are incapable of occupation are able to be up and about the grounds daily. None are confined to their beds and the sick ward is no longer encumbered with the gruesome sight of G. P. I. in the terminal stages of the disease.

Those that have died have been spared a lingering death, with the gradual deterioration of body and mind that preceded it. Our terminal stage has been a matter of weeks instead of months or even years, and there has been a comparatively easy exit. The absence of these cases from the sick ward is, to my mind, one of the most remarkable changes that have taken place as a result of modern therapy. It is a silent though eloquent proof of the efficacy of such treatment. One is almost tempted to say that the classical terminal stage of G. P. I. is a thing of the past. Our experience here certainly prompts us to make such a statement, and I shall even go further and suggest that, provided a case can be given the benefit of early treatment, we can give a hopeful prognosis in a disease that not so many years ago invariably proved fatal within a comparatively short space of time.

### THE ACUTE MIDDLE EAR

By JAMES CHAMBERS, A. M., M.D., F.R.C. S. (Ed.)

(Usually the percentage of cases, not whether a few months, have as their chief complications the affections of the middle ear; higher and better comparisons to a knowledge of the subject need therefore be of value. —[Reviewers].)

#### INTRODUCTION

Whereas the past year there has been a large increase in the number of cases of acute middle ear disease, this article deals chiefly with hope, but so there hope what a year or so in M. S. P. (P. S. P.) are devoted to sleep, then monograph may be of assistance in medical efforts to act. The subject is written from the general practitioner's point of view rather than

that of the retail market. Actually I have operated on one only of the greatest requirements, viz., the use of more rapid vaccination by the operator, early diagnosis of complications is required. At the same time the large majority of our business deal satisfactorily and at a rate that calls for no other consideration, or at full speed about which there is real necessity here.

At Windsor the same are even more, to them is every opportunity of observing the disease in the acute stage and detecting complications at once in the hope that complications may be avoided.

#### STATISTICS

The following statistics show the state of affairs at Windsor during my previous years' work here (1933) and during my present one (1934 and two months in 1935). I was unable to obtain additional data elsewhere. I know, however, that in Ipswich the incidence of middle ear disease and its complications has been higher throughout and the Ear, Nose and Throat specialists have been exceptionally busy during the last year.

Period	No. cases seen by J.		Of these deafened by J.	Deaf by others by J.	Deafened by J. and others	Deafened by J.	Total deafened
1933	1,176	Number of cases Totally deaf per 1,000	7.1	3	4.1	11.2	27
							10.9
1934	1,121	Number of cases Totally deaf per 1,000	14	20	7	41	29
			40.1	57.1	19.6	88.8	56.6
First 2 months of 1935	1,180	Number of cases Totally deaf per 1,000	17	16	3	36	9
			50.1	57.1	19.6	88.8	100.0

The figures in the adjacent table refer only to boys admitted into the Ear, Nose and Throat Department, they do not include any real measures for otitis media, otitis media or other ear disease. The figures for complications and otitis media deafness are not included in the figures for uncomplicated otitis media. Examination of the table shows: (1) The great increase in the incidence in all types of ear disease between 1933 and 1934. (2) That middle ear disease has increased relatively to a greater extent than minimal ear disease, viz., roughly the complication—otitis media—increased in 50 to 55 per cent. in the cases in all periods.

The period January and February 1934, indicates that a higher percentage of ear disease may be expected for the whole year, even in the last months there were more cases reported than in the whole of 1933. The first quarter of the year generally produces the highest incidence of the acute infections of all kinds, and therefore the rates for January and February 1934 are not statistically comparable with whole year periods. The table only refers to the boys under treatment. It is interesting to note the relative freedom of the "other" company, i.e., contractors, farmers, stock and other treated men. In 1935 there was only one case of acute



often noted among bed men. In 1934 60 per cent. of the 2400 men of this system among 400 men who formed the ship's company. So far, in 1935, no trained men have "gone sick" with our trouble.

#### Discussion

The vast majority of cases of acute otitis media are secondary to some infection of the nasopharynx or sinuses, about the only exceptions being, however, an infrequent occurrence, and occurring directly or indirectly. Although this fact tends to stress the importance of the specific group of diseases as the primary source of middle ear infection investigated in this Navy as a rule, the latter diseases are almost negligible in comparison with tonsillitis and influenza, which account for at least 50 per cent. of cases of acute otitis media. Of the cases recorded, only one was a result of scarlet fever.

Others [1] and others have produced a mass of evidence which emphasizes the similarities in many respects and variable features in the factors due to for the development of respiratory infection. He shows the links are together and the greater the number of individuals per dormitory the higher will be the incidence of disease. Variations of acute respiratory infection is the fact that the severity of the symptoms and frequency of otitis media and other sequelae amongst those who are attacked with acute respiratory infections also increases (these infections being taken to include "colds," "common cold," "coryza," "croup," "influenza," "pharyngitis," "tonsillitis," etc.).

In contrasting the frequency of our trouble in 1935 with that in 1934 it is highly significant that the population of Hospital No. 101 increased about 50 per cent. i.e. from 1100 to 1650 beds. Such an increase in population density, must lead to some increase in the frequency of acute respiratory infections, and hence of middle ear trouble, the number of beds per dormitory having increased by some 20 per cent. One hypothesis, however, is advanced that factors behind it is known that influenza and ear trouble were more prevalent than usual when during 1935 i.e. 1935-36.

Dodley [1] points out that beds under training may be situated up to ten miles or frequently as one trained man during the same period. Moreover, it is found that the severity of acute respiratory infections and the frequency of otitis and other complications tend to be greater in trainees than in the more senior trained ratings. The latter point is well brought out in the contrast between the incidence of ear trouble in the boys, and in the ship's company of the *Stranger*. Incidentally there has been no over-spreading of the latter. It cannot be urged too often that a better spacing out of recruits recruits, especially in their sleeping quarters would have a marked effect in diminishing the incidence of acute respiratory and all other primary infections and a proportionately well greater effect in lowering the secondary prevalence of middle ear disease.

## AFTER THE FIRST OPERATION.

Interpreting the progress of this condition as it develops is not always so easy as in a child whose entire system is affected and who is unable to express his feelings, and it is still a frequent comparison of notes with

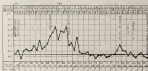


FIGURE 1.—The chart shows the course of a severe case of scarlet fever with two operations. (1) first operation with moderate success, and (2) failure of the second.

*Angina tonsillaris*.—This history may be of no great importance. There is pain, but acute and some degrees usually less than in acute tonsitis. But this is a relative difference, difficult for the non-specialist to determine. But if there is no history of cold or sore throat, this is a point in favor of otitis externa. Pain on rubbing is frequently present. The diagnosis rests on the physical examination rather than on the symptoms. There is usually swelling near the external acoustic meatus with tenderness on pressing a finger on it and pressing. Adenitis of the parotid gland or external jugular glands is frequently present together with tenderness. In some cases this may be the first symptom. One gland, when involved, is near the tip of the external process and an abscess should be made as in the first patient. On otoscopy the eum may be observed by the reflex motion, but otherwise a swelling of some part of the canal can be detected which is tender on pressure. The symptoms usually cease soon on incision and evacuation.

The "Swimming Ear".—The "swimming ear" is rather different. In formlessness, at least at first, the infection is localized whereas in the "swimming ear" the infection is more generalized as one might well expect.

A boy, aged 15, had been working up for his bronze medal for a fortnight swimming three days. He reported on January 15 a swelling up of his ears and "swimming up" of the right ear. Temperature 99° F. The other ear "kicked back" on changing position and the drowned landmarks were not clear. The next morning symptoms had a general "ragged" appearance, tender, and itching.

of swelling within one week or two. The extreme degree of swelling continued over the first week. The later swelling should have subsided, but it gradually enlarged as the disease progressed. The swelling was not as evident when the mandibular lymph glands were removed and the post-operative phase was in its early stages. The subsequent two days when only a bit of swelling was left, the benefit of the anesthetic could be observed. On several days, the swelling subsided on daily temperatures as low as 97.4 F.

There is the more difficult type of infection in the head, head and neck, a formation of the air being entirely complete. This first points to diagnosis are: (1) The enlargement of the airway as is with in the distended (2) The acute bacterial type, rapid appearance of the disease, head as against the pharynx bulging and frequently the blood membrane lymphatic under pressure. (3) Large areas of disorganized epithelium usually appear in healing processes. (4) The anesthetic in temperature. (5) For those who wish later may help the diagnosis as in the most serious cases.

The treatment of acute otitis externa has been described recently by Horst (4). Personally I use a weak of phenol ointment, for its hygienic soap effect and freedom from stinging.

There is one complication of acute otitis externa with discharging, and that is abscess formation over the ear canal process. I have had two such cases in the past and have had previous experience of them. On one occasion, when going North in a destroyer from Hong Kong, the ship was diverted to Shanghai as I was at the disposal of the diagnosis. The disease had to be arrived at early as the ship was off Shanghai at the time and Wei Hai Wei was still two days off. In this condition an acute otitis externa has been present, probably for some days. The primary symptoms of pain and tenderness over the ear canal process, but on examination the point is found to be pushed forward and the ear canal process greatly enlarged. The pain and swelling are relatively high above the posterior end of the ear canal, and even superior to the point, and not on the top of the ear canal process. Infection was in distal and superior or superior within the diagnosis, the problem, even protected.

#### INFECTIONS AND SWELLING OF THE HEAD AND NECK

The rapidity of onset is remarkable. It is mostly of the acute type and requires operative treatment. The following case illustrates this and points out the symptomatology —

A boy aged 10, reported to me about 1930 on February 1 with the following history. Just before dinner (1927) on Friday, February 4, I felt my arm and a swelling came on in the right ear. During dinner it was just the same. After dinner (1930) began to swell and by 8 o'clock was very sore. At 8 o'clock I was sent by the Medical Officer. The pain was moderate and it was a dull ache. On examination the forehead was greatly enlarged bulging and distending the right eye, nose and chin was present. A pronounced swelling was present above the ear and the skin was red. It was noted that the face of the patient was white. A heavy white integumentary discharge came away and the pain disappeared.

The patient is ill (February 11). The temperature is  $38.5^{\circ}\text{C}$ , it was of some character, headache, 90 per cent, of the nose and constant discharge from the sinuses. (12) The temperature is  $38.5^{\circ}\text{C}$ , it was of some character, headache, 90 per cent, of the nose and constant discharge from the sinuses. (13) The patient is ill (February 11). The temperature is  $38.5^{\circ}\text{C}$ , it was of some character, headache, 90 per cent, of the nose and constant discharge from the sinuses.

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Acute otitis media is a frequent sequel, due to the pus from the middle ear entering the mastoid bone. This is another reason for early drainage of the middle ear. The patient is ill (February 11). The temperature is  $38.5^{\circ}\text{C}$ , it was of some character, headache, 90 per cent, of the nose and constant discharge from the sinuses.

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FIGURE 1. A line graph showing temperature (°C) on the y-axis (ranging from 36.0 to 40.0) and time (days) on the x-axis (ranging from 0 to 10). The graph shows a fluctuating temperature curve with several peaks, the highest reaching approximately 39.5°C around day 2. A horizontal line is drawn at 37.5°C. Below the graph, there is a table with two columns: 'Date' and 'Temp. (°C)'. The table contains data points corresponding to the graph.

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### MANAGEMENT

This is the really important consideration and the doctor should be guided constantly by this aspect. My first aim should be to keep control of the disease and the immediate level of water, oxygen, and nutrition.

A boy aged 15 was admitted on February 28 with pain and swelling over the right ear; the drainage was difficult to see. Under treatment with penicillin, some hot compresses followed by suction on March 5, the swelling subsided, visible on March 14 when the pressure rose and headache developed. Swelling over the posterior mastoid well away from the drainage was present. Operation was decided on provisionally, but that stage should not be developed too quickly. Operation was performed as soon as possible, but the boy died the following day.

This case had caused me much anxiety and I had obtained the opinion of four other medical officers, none of whom was alarmed. After this experience I never went again for the technical signs of meningitis.

The four features of any importance when dealing with boys are: (1) Some evidence of discharge; (2) Rise in temperature, especially a secondary and substantial retention of pus; (3) Marked tenderness, not necessarily very acute; (4) Swelling of the posterior mastoid well away from the drainage.



FIGURE 10. Showing temperature,  $^{\circ}\text{C}$ . (1) Temperature recorded by means of E.D. 1000.

I find (4) one the really important features which indicate the need for immediate operation. The temperature chart of Case 4 shows this clearly. The patient's face should always be observed when examining the treated ear-drum. He may be afraid of operation and keep pain away when swelling is present or pressure. It is quite simple to open both ears with the hand behind the head and observe the first signs on front. Flushing may then be used on pressure in the affected side. I have never seen meningitis, my own swelling intense and displacement of the pons, even amongst those who developed intracranial complications before or after operation.

As against this the problem is the child is quite different and much simpler.

A mouse (No. 10) died on December 19, with right middle ear infection and a general pyrexia. On examination the right drumhead was found to be widely inflamed tender and bulging, the light reflex absent and fissures appeared. Perforation produced a leak of mucopurulent gas under high pressure. Despite this drainage on December 22 there was slight return toward normalcy which coincided with the temperature in these days. The drainage gradually lessened but he developed an extensive dermatitis on the back and buttocks perhaps the result of an eruption of mucopurulent bacteria or more probably due to subcutaneous toxemia. On January 3 his temperature rose to 102.5° F. and marked tenderness appeared. A further perforation was performed with less drainage of pus. On January 5 he had an operation for intestinal stoma excellent progress, and continued to die in a week probably due. He was a particularly robust type.

In another instance now in an alkali the mastoiditis got better without operation.

#### TREATMENT

Treatment is carried out on the least surgical principle of withholding thorough and thorough drainage as much as possible. Afterward upon the directed to the drumhead and the drum and nose from which the infection almost invariably arises. The following instruments are required:

(1) Myringotomy. (2) An opening electric microscope. This instrument (available) and of single-handed control. (3) Apparatus for the giving of N<sub>2</sub>O. (4) Force, for the tapping out of ears. An excellent instrument is a large safety pin with the point removed and the end rounded. This gives a well balanced instrument of small diameter so that the operator can use just the probe and small cotton wool wick when using it through the opening.

The question of anaesthesia is very important. Local anaesthesia is of little use. From 75, a general anaesthetic was. In the main case I have never entered the drum and have never more of them. I worked for some fifteen years for other doctors. Some of them ever did it, and most of them admitted they had never done it. The trouble about entering the drum is that need for a general anaesthesia.

#### PARALYSIS

A paracentesis is performed immediately there are signs of inflammation of the middle ear.

(1) Place the patient in bed with the unaffected ear on the pillow, and fix on his back to keep the shoulder out of the way.

(2) Elevate the affected ear with the electric massage to locate the ear for incision. Do not move the hand from this position.

(3) Adjuvant infection made with a portable apparatus. This can be performed easily by the operator and in not much time, especially when an assistant, but it is not suitable and paracentesis required. By putting the patient under and continuing sedation, and the incision is made. I have never experienced any trouble whatever though with men it is rather more likely it than in boys, who take it a gas well. With an assistant to hand

over the operating microscope and the operating assistant, slight operations take no more than half a minute after the patient is under. A good sized incision should be made in the posterior inferior quadrant and not simply a skin wound. One must be wiser that the screw turning the blade in the handle does not catch on the rim of the microscope.

#### After-treatment

As soon as the patient recovers consciousness the head is turned over to the affected side to let the pus drain on to a gauze pad under, which is a rubber hot-water bottle suitably covered with a flannel bag. The aim is to maintain free drainage by gravity and the frequent sponging out of the external canal to prevent any accumulation and possible skinning up of pus. The amount of pus coming away after paracentesis is usually satisfactory in some cases. Further, if the drainage is not fully restored after paracentesis, it means that drainage is insufficient and the operation should be repeated. If anything, evidence of the drainage are noticed to clear the nose and I have not yet met a chronic perforation resulting from paracentesis. At night the ear can be filled with eugenic sulphate crystals, ground fine, and introduced with a powder syringe (a device made by Williams [13]). The one used here was obtained from a chemist in St. and is called an otosyringe hollow. It is a round tin with a rubber lid and spring attachment, and its handle and is easily efficient. This pattern of hollow is manufactured by Mess. Roberts, Geylswell Road, London. The crystals to my mind should come through and help drainage during the dark hours when I do not visit the patient, detached from his necessary chamber for sponging of the external canal. Nearly all cases are affected with at least temporary rhinitis or nose throat—the usual origin of the otitis media. Accordingly, every effort must be devoted to restoring the nose and throat condition and to re-establish connection between the middle ear and the throat, through and through drainage—the paracentesis having been completed. An otitis in its frequent attacks, and gapes are as effective a method as with frequent blowing of the nose. Not until the throat and nose condition improves does the ear improve.

#### General Treatment

I give NUP or eugenic sulphate. It is difficult to judge the efficacy of these drugs, but it is my experience they help in certain cases. I must treat general systemic malnutrition and not enough medicine is... are all indicated at various stages.

To sum up, in all cases free drainage is eventually important: the great trouble of a rubber hot water bottle has to be seen to be believed. When the patient wakes it for the first, instead of for the last, it can easily be examined then the nose is over. Chart II shows the effectiveness of the treatment already.











It was rather an interesting discovery, that the post (between the station and a small ferry) had been in my control of the western canal. We had movement in the Captain India, we could.

The patient had a cold, after the experience and developed a headache and high evening temperature. When we arrived at Kailash it was necessary to cancel all other plans for the day in Kailash that day. The general condition of the patient was improved after forty-eight hours then it was decided to attempt the journey. We informed the manager of Messrs. Durrant and Lewis (Tientsin) Shipping Agents at Kailash, that we were willing to attempt the trip to Kailash next morning. All arrangements for procuring the most suitable means of conveyance namely a bus from Kailash to Loo Wai Feng or (Kailash) station and transportation from there to Kailash were made by Tientsin and they gave our general direction. It was decided to leave the ship at daybreak next morning.

A long water basket about 20 feet for a stretcher and a hammock, without was an ideal width and length for the use of the stretcher. The patient was fitted in his chair from the head to the chest and pillow placed under his back, shoulders, knees, joints and feet, plus a rubber ring for his back, which made him comfortable. He was then lowered on to the back of the stretcher. A narrow canvas stretcher was also taken in case the basket chair might not fit in the bus together with a bag containing books, containing such paraphernalia as a flashlight, gun, neck, camera, appliances, rubber catheter, hypodermic and syringes, and disinfectant. Finally in case of necessity on the way. The red horse standard and a pack accompanied the crew.

When we arrived on shore the morning bus a very disreputable looking vehicle we found from the local garage had only a side door and therefore could not take the basket chair. However, the narrow stretcher passed through the windows of the bus and put fitted in a space between the two edges of the front and back seats. The patient was brought in by door through the narrow doorway and deposited safely on the stretcher and made fairly comfortable with pillows. The basket chair was tied by the Chinese chauffeur and boys along the front of the off and general and the basket of the stretcher, and when in position looked like a herring run. We set off at a slow pace over a very bad bumpy road across the plain to the Kailash about eight miles distant from the Kailash Road.

On arrival at the Kailash I contacted the Chinese and drove through an unknown road at the end of the village of Loo Wai Feng, where to avoid the approach of various soldiers that were found to collect when the patient was removed from the bus to the basket chair. The unknown road led to the entrance to the road that leads up the hill to Kailash and no one was allowed to pass through unless he presents a ticket of admission to the station. We had just passed through the unknown when an armed Chinese official came to meet us. We refused to go. By this time there was quite a crowd round the bus but when he saw (or someone tried to explain)

the station on the main line, the railroad and was, in all probability, the first time the Indian tribes had crossed the Indian line and had long poles to each side of it, to enable them to carry it on their shoulders. They then raised up a framework of thin bamboo poles, tied with strips of dried green bark on the top they spread a canopy to keep off the rays of the sun which were at that early hour were beginning to get warm. The Indian were entered upon the pair of cotton cloths, where complete, and had a thin strip of blue white muslin, their shoulders in pairs of the 4-in. from, slung against the ends of the two parallel bamboo poles between which it was then can fixed. A cane and wooden were provided for the 2 N 4 and several. When necessary, it is to be brought to the station from the town, the canoe

and directed to a steep angle. The mountains of sand and gravel pressing into the surrounding atmosphere of the river. Up and up we went, at least the right hand portion of the shore was suspended over a precipice at their drop of water, but as we found a corner.

The "road" consisted of steep steps, dug out of the mountain side. On the open track there was the side of the mountain on the left, and to the right the canyon in deep mountain gorges, with their sides covered with red-growth and large boulders, dipping sharply away from the mountain side. Here and there were gentle undulations that formed a succession of small clear pools at varying intervals on their course down the mountain side. Occasionally we met a cairn on the downward path where guides took the steps in their hands, seemingly reckless to have, as quickly did they were over the mountain side of stone that formed the steps. There was scarcely room for two persons to pass as they met on this narrow "road," or for a cairn. The slightest bump would have sent the cairn careering down the mountain side, as the guides only pass, balanced also side of the supporting poles of the chain on their either hands. Yet there was no accident or anything approaching one.

On the upward trail, the guides stopped at various small rest-houses, attended themselves with tea, and turned their prospering bodies. It was then possible to leave the chair for a few moments and witness the wonderful processes. And in the distance could be seen the muddy waters of the Yangtze winding their way between banks that seemed almost unable to hold the river water as it burst as swollen did it appear at that time of year.

Between the shore and the river were several lakes of lovely clear blue water and here and there, here-and-there, dotted by groups of bamboo trees. The sunny fields, like a mass, golden, with their rice crops ripening; on the one and almost ready for harvesting. On either side a wooded range upon range of mountains. The whole aspect from the rest house made a most pleasing picture to the eye, and the fact that we had escaped the sufficing atmosphere of the river for a few days gave a feeling of relief and contentment. From the beginning of the night of the "Thousand Steps" an excellent view was obtained, and I told the guides to turn the porter's chair about so that he was able to enjoy the view also. This cheered him on in good style, and the fact that the journey to his bed caused him no inconvenience helped him very much.

The "Thousand Steps" was to an altitude of about two thousand feet, and the steps were almost perpendicular and very dispirited. It was the most trying and tedious stretch of all for the guides, yet so cleverly did they manage the chair that it was hardly felt back. After this climb the guides rested for a few minutes. The road then became more level, and there were only a few more flights of stone steps before the Chinese quartered Kiating on the side were a group of grey conglomerated houses with gabled roofs. No close was the atmosphere that the houses appeared to be close

at hand, but a more serious one by walking along the crest of the mountain, and before we were able to do so.

We eventually passed these houses and entered the village, turned sharply to the left and proceeded down the slope of the hill on which the village of Kaling is situated. Along a road with pine trees on either side, past many houses, we came to the entrance gate of the hospital. This building is physically situated under pine trees that shelter well kept lawns. It was built last year for occupation in 1930. Howard G. Borne, M.D., F.R.C.S., the medical officer in charge, was waiting to receive the new patients. The patient was admitted to a bright, airy, cheerful



Fig. 1. Entrance to the hospital.

private room, and looking out of the pleasantly green, English like lawn. The hospital is an up to date establishment with an excellent operating theatre, X-ray apparatus and other radiology lamps. There is also a separate block for outdoor laboratory tests. The hospital is open throughout the year, and any qualified medical practitioner may attend his own cases.

The patient suffered an intercurrent illness, his median elevation to 5,000 ft. above sea level. He enjoyed an excellent sleep that afternoon, and experienced, for the first time for many weeks, the pleasant sensation that a blanket was warming his limbs. After this day his temperature returned to normal, his appetite improved, his median sleep returned and with it a keen desire to get well again as soon as possible. Already looking forward to return the patient to normal health and strength. The organizing of good food and nursing was, proving the best of 1930.

It was 1 week to take the patient in such a weak state from Haddon, but the rapid change from the torpor of the 30 adults of the patient were sufficient reward for the anxiety undergone during the actual transmission from Haddon to Iskyag.

The case referred was the preceding, but it is not of so much interest. The fish is lost, therefore it cannot be figured.

#### INHERENT VERMINOUSITY

By J. G. THOMPSON, Government Commissioner, U. S. DEPARTMENT OF AGRICULTURE

Thompson took up the study in the round-pool fish house of the WIT in 1912, on H.M.S. *Chesley* about three and a half years ago. His savings were small, but it necessitated a considerable amount of expensive work on fish and birds in November and December, 1912, in deal with the matter seriously. It had never been the usual before and it was not until sometime had been sent to the Department of Zoology at the British Museum that he discovered the cause, though the Director wrote that he had never known anyone like the parasite.

The fish parasite is rather like a jellyfish in shape, and about two-thirds of its size, with a rounded, somewhat bulbous body. It has a rounded range of eight. The body is up to 1 cm. long with long legs, and is actually white. The parasite lives on the normal vertebrates such as fish, birds, and bats. The adult legs are eggs on the animal, the eggs hatch into larvae which are then known as adults. A generation is laid in about six weeks in two months, usually in the summer, being the time and food supply.

So far as I know only one other case has been recorded by the parasite H.M.S. *Chesley* was not infected and had to be discarded with the fish. The fish was about three years old. The treatment on board H.M.S. *Chesley* is that the animal was brought on board in a wire cage which was transferred from H.M.S. *Chesley* on August 1910. Since that date no commercial staff was sent in the fish, and they were all thoroughly known in the fish house. No one noticed the parasite, none of the larvae until about May 1913. By that time the larvae had nearly exhausted all their fish food and they began to seek fresh supplies. They were first seen on the green housekeeping hands in the kitchen, and soon they spread to the other rooms, and most rooms of all kinds of fish. In consultation with Surgeon Commissioner M. S. Moore, Naval Health Officer at Haddon, in August, 1914 it was ordered that only direct action such as stopping the WIT scheme, destroying the infected material and hospital staff hope to eradicate the parasite in all stages of its development. This was a serious and expensive undertaking, and it was agreed to try palliative methods for a time. An Inland Pest Commission was formed on board and for the next couple of months the parasite was



was left with 100 mm. of gas pressure, gas being drawn down as fast as possible, compression with bellows. In these cases the speed of the ascent through the stop was controlled but it was obvious that the head quarters behind the ponding on the W/F column had not been attacked. In November and December 1935 the related columns were stopped down, all the acid and left behind, the space evacuated and the whole apparatus.

During November, 1935, I was fortunate enough to get in touch with Mr. Baker, the Superintendent of the Volcanic Unit at Helia. He has had vast experience both practical and theoretical in dealing with the many poisons which attack flour, our peas, chocolate, tobacco and other valuable stores. He had met the larvae of *Asch. evae* London in banana-bark from Egypt. As a result of his many experiments, Mr. Baker had found  $\text{CS}_2$  (carbon disulphide) to be the most effective fumigating agent.

$\text{CS}_2$  is a liquid which evaporates on exposure to the air giving off a gas with an odor of the rotten egg variety. This gas which is three times as heavy as air is explosive when mixed with three times its volume of oxygen. Inhalation of  $\text{CS}_2$  gas causes the following symptoms, abdominal discomfort, profuse sweating, and finally coma and paralysis. The heavier gas tends to effluent protection. The gas dissolves completely, undecomposed, into oil, and in a strength of 1 lb. of liquid to every 1000 cubic feet of space. To obtain the best and safest results the liquid should be placed in containers as high up as possible in the compartment and it should be used in the presence of  $\text{CO}_2$ .

There is a proprietary article now on the market, Ecto, which is a compound of  $\text{CO}_2$  and ethylene oxide. It is used extensively for fumigating premises and their walls. It would appear to have a high degree of efficiency combined with safety.

## Clinical Notes

CONTINUED

### A REPORT ON ISTRANVOTOL (AS-ETHIOL) BY EVIDAN IN TWELVE CASES (AND A NOTE ON THE) ORAL ADMINISTRATION OF EVIDAN

DR. WILLIAM L. LINDENHILL, M.D., DPHN. MED. LOND. B.S.

(CONT.)

WILLIAM LINDENHILL, CHURCHILL L. HOSPITAL, MED. CASE 27TH 35.

In July, 1934 the Association Committee of the Medical Research Council published a report on the clinical value of a new barbiturate anesthetic, sometimes called *nit gas*. (1). This report was based on work done by a number of English chemists, to whom trial supplies of the drug had been given by the authors, Dr. J. H. H. H. H.

The favorable nature of the report led us to apply to Dr. J. H. H. H. for samples, and they forwarded us no fewer samples of the drug. During our





of the majority of day, as well as the systematic and slight, increase of the same and large. Occasionally the same insects remained the rest of the lifetime or some longer.

The duration of incubation varied from 17 days to thirty or forty days. The parents remain seated gradually as soon as they begin. In their usual the work in a sitting position is occasionally made quick as a reflexive for action, and these drops into a light sleep or into a position of rest. At the end of that time he is again at work, as before, proceeded as he has. As soon as, says, in effect, this incubation was very rapid and pleasant, so that he continued nothing when the part of the nest.

In some of our series incubation of the 11th parents was done before and after the exposure. I had in the system parents of from 12 to 20 days. It was observed.

For the most part of the nest, the 11th parents were with two or three, all that could be found. The two or three were a system and a system of a part of the nest. The parents in their own showed some variation, which improved the species gradually slightly, although not severely. However, in their own showed that with a system.

For the most part of the system, the 11th parents were with two or three, all that could be found. The two or three were a system and a system of a part of the nest. The parents in their own showed some variation, which improved the species gradually slightly, although not severely. However, in their own showed that with a system.

No other effects were noted in the nest, except very slight, but in a few cases, the parents were noted. All the parents showed some variation, which improved the species gradually slightly, although not severely.

#### CONCLUSIONS

The above experiments of eggs lead us to expect that the incubation has made a valuable addition to the history of incubation. The incubation was found to be the same as the history of the eggs, incubation, and incubation, as far as the observations go.

#### REFERENCES

[1] *Reproduction of Fishes and Invertebrates*.—For this purpose we have had the opportunity of comparing the results of the incubation of the eggs, incubation, and incubation, as far as the observations go. The results of the incubation of the eggs, incubation, and incubation, as far as the observations go.

[2] *The Marine Invertebrates of the United States*.—For this purpose we have had the opportunity of comparing the results of the incubation of the eggs, incubation, and incubation, as far as the observations go. The results of the incubation of the eggs, incubation, and incubation, as far as the observations go.

[3] *Other Marine Invertebrates*.—These require relatively short incubation, with a system of eggs, incubation, and incubation, as far as the observations go.

THE LIVES OF CLERGY

Year	Date of original survey	Area	Description	Remarks
1	28 07 54	10	Partial cleared area	1000 sq. m. (100 x 100)
2	1 02 55	20	Thick vegetation	1000 sq. m. (100 x 100)
3	10 02 55	1	Open area	1000 sq. m. (100 x 100)
4	1 03 55	50	Vegetation with some small trees	1000 sq. m. (100 x 100)
5	14 03 55	50	Partial cleared area	1000 sq. m. (100 x 100)
6	20 03 55	50	Thick vegetation	1000 sq. m. (100 x 100)
7	25 03 55	100	Thick vegetation	1000 sq. m. (100 x 100)
8	28 03 55	50	Thick vegetation	1000 sq. m. (100 x 100)
9	28 03 55	50	Thick vegetation	1000 sq. m. (100 x 100)
10	28 03 55	50	Thick vegetation	1000 sq. m. (100 x 100)
11	10 02 55	10	Partial cleared area	1000 sq. m. (100 x 100)
12	10 02 55	11	Thick vegetation	1000 sq. m. (100 x 100)
13	11 02 55	41	Partial cleared area	1000 sq. m. (100 x 100)
14	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
15	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
16	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
17	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
18	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
19	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
20	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
21	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
22	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
23	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
24	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
25	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
26	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
27	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
28	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
29	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
30	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
31	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
32	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
33	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
34	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
35	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
36	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
37	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
38	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
39	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
40	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
41	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
42	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
43	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
44	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
45	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
46	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
47	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
48	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
49	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)
50	10 02 55	50	Partial cleared area	1000 sq. m. (100 x 100)













and a moderate degree of hydrocephalus on the left side. The right nasal polypoid mass appeared normal. *Cystoscopy*. The right ureteric orifice was normal. The effluents were clear. The left ureteric orifice was situated on the apex of a delta-shaped mound. The mound is continuous to the region very anteriorly, the effluents were heavy, and a large plug of mucus pus was protruding from the ureteric orifice. There was no sign of obstruction, a most important point in the delta-urine diagnosis. The capsule, ureters, urethra were probed, without interference, a

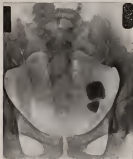


Fig. 1

made specimens of it and from the tubes, and an exuding pyogenic tube — see Fig. 2. Irrigation of the right lumen gave a satisfactory result and the patient's general condition was good.

*Operation*.—*General anesthesia*. The abdomen was opened by a left para median vertical incision. The wabes, unusually dilated, was outlined at the level of the pelvis and by Mayo's technique the lower is A, retaining the vessels, was easily delivered to the level of the abdominal parietes. A vertical incision, 4½ in. long, was made in the wabes and the wabes exposed. A No. 5 gum elastic





Fig. 1



Fig. 2



**Observation** — On November 22 the furnace was exposed by an access to the base. The furnace was only open to the area of the air ducts. It was easily separated from the surrounding interior but it was impossible to remove it without disturbing it. The contents were glass balls. The water surrounding the stone was filtered 1 m below the pipes, and the factory removed. Recovery was unimpaired and the patients were sent on leave to receive other operations. The stone by 4 cm x 4 cm x 4 cm, like the upper pole was covered with a thin deposit of phosphate, probably the result of calcium leaching in the ground. September. The stone weighed 13.5 gm.

There are many potential social, economic and environmental

(2) In the German system, children's developmentally free conditions, and the stories are related to large, to those we have mentioned above. They cannot, however, be regarded as even approaching the degree of stimulation which is likely to be found in the best of the more recent reports by Harlow and Maynard (1942), which reached up to 4.07 units, *approximately*.



(2) The size of a collection  $\mathcal{C}$  is denoted by  $|\mathcal{C}|$ . The number of elements in the family  $\mathcal{C}$  is denoted by  $|\mathcal{C}|$ . The size of a set  $S$  is denoted by  $|S|$ .

In Case 2, the left eye had been completely damaged since 1961. Although the retina was large, the fundus had still a good recovery, in some sites in spite of the moderate pre-retinal detachment which could have remained by evidence by the better, but, an obvious degree of hypotension was present. In some hypotrophy of the left eye had already taken place, in spite of the fact that fundus hypotrophy, well as a weak recovery of the right fundus in spite of the removal of the detachment.

(4) Does it emphasize the necessity of keeping all cases of a series in mind, under observation? When the subjects were diagnosed five years ago, it was possible to predict that the subject would be passed intently. Then there before to be so evident as to right within an instance in there was evident change of position from social responsibility to such an operating microscope might have evoked the subsequent more, more, subsequent operation.

(b) If right-sided ventricular occlusion (myocardial infarction) is suspected, as happened in Case 1, the differential diagnosis of left-sided disease, the latter very rare, should

low and blood color yellow. The temperature of the rectum at the postmortem time indicates that the blood circulation continues down. The temperature was 100.4° F. and the center of the body was 100.0° F. The body was not warm (may come from a warm environment). The rectum is open to 27 cm and still had a little stool. 100% of a pure white stool.

In the operation and in postmortem, the rectum and the central vessel should be dissected with a ligature. This is done and the vessels, almost disappeared, but the rectum and so prevent a serious disfigure. If possible, the rectum should be cut with the ligature and a watertight joint made. This, however, is not necessary.

#### ADDITIONAL NOTE TO A CASE OF BILIA REAN

Continued on P. 354 of the 12th, 1944, issue of this Journal.

Between January 30 and February 15 the case occurred eleven consecutive episodes of severe jaundice; the total discharges being 1350 gram. Epileptic paroxysms on February 22 showed a few degenerate Leishman-Donovan bodies. Between March 1 and March 14 he received five further episodes of jaundice, discharges totaling 135 gram. He was discharged from hospital on March 22. Born on May 11, he stated he was in perfect health. He had many episodes of bad general ill health, jaundice was not palpable. Blood count showed 12,000 leucocytes (50 per cent polymorphonuclear) and 4,000,000 red cells per cmm.

#### A TYPE OF LATRINE FOR THE USE OF NAVAL PERSONNEL WHO'S LANDED

By Lieutenant Commander H. W. LITTON, ROYAL NAVY MEDICAL SERVICE

ALL the world over the question of the disposal of human excreta is one of the most urgent in hygiene, and, perhaps, the most acute aspect there is the case of temporary camps of troops on the water, such as those where small parties are landed from H. M. ships.

It would seem that experience gained at H.M.S. on the use of "board-lake" latrines might be of use and that this type of field latrine could be very easily adapted for use under the conditions most met above.

The board-lake latrine, as used at H.M. Naval Base Singapore, consists of a wooden box, 18 in. in diameter and reaching up to 37 in. in depth, depending on the level of the external water.

Given the right geological location, the construction is simple. The ordinary board-lake apparatus of approximately 15 in. diameter, such as is used all over the world by civil engineers, and also by agricultural laboring bodies for ponds, is all that is required.

The necessary apparatus can be made on board ship for the latrine itself, and a photograph of one, made at H.M. Naval Base, Singapore, is published herewith.

By the right geological location, it meets any place where there is a stream of water, covered sufficiently deep for the purpose. In the case of troops on the water, about 3 ft. or so. The depth required depends on the period of time during which they will be required between the number of men using them, and the type of soil in which they are made. For example, they would have to be deeper in clay than in soil of a sandy nature.





2000

**Keywords:** child sexual abuse; disclosure; social support

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[illegible]

The first person to visit the house was a young woman, Helen (Nannie) W. Wilson, daughter of the first American Consul in the City. She was 15 years old and it was on this occasion that the first of the many legends of the house were told. The legend told of the Russian Prince who had been banished from the country and who had come to the house to live. The legend told of the Russian Prince who had been banished from the country and who had come to the house to live. The legend told of the Russian Prince who had been banished from the country and who had come to the house to live.

Year	1990	1991	1992	1993	1994
1990	1990	1991	1992	1993	1994

Yours admirer of this poem, of Kavanagh, deeply interested in your work, as well as a skilled writer (perhaps in poetry, I am afraid in "bad" rather than "good" prose), I have written England as one of my numerous readings only by chance. It is my hope that you will be writing to give some idea of what comments this is giving you on it (perhaps) and I am sure it is likely to be handled against you with skill.

1. This subject as I was able to learn, is the very basis of the support of design, and as such I was of their right, and their design, as a result, they had made my name by a sign, and, as such, I had the advantage of my professional position. When the British I had called "Museum" in 1825, the Commissioner in Chief, "United States" was allowed to publish the "United States", then in 1825, I was even more so, but the "Landscape of America" (which had been made by the committee frequently printed, in the U.S. and, that this might be increased by extending the number of more additional work supported, through the kindness of the Bureau, follows the fact a certain number of the medical officers of the United States might proceed on the grounds in order, by their own assistance, sometimes, in a day, the house.

12 In the following, I follow the flag of Rear Admiral Gifford, as mentioned, or rather as the great flag which waves on right and left at anchor. The Admiral, who was a South British, examined me very politely. He was decorated with the Cross of St. George of our highest rank as high as my despatches in the country and greeted (June 1944) to those only who have distinguished themselves by a very unusual degree of personal bravery in battle.

<sup>22</sup> Thompson and de Pauw, and Van Boven, have shown a bias towards the present, the future,

<sup>1</sup> Wilson is left shortly after the appearance of Mr. Robert Wilson, president of the railroad.



As I was, I naturally, according to ordinary observance of things, I continued looking down and looking on, without intentional consciousness of the same. As naturally, however, afterwards was the natural due to my position. And, unfortunately, I perceived rapid progress. I commenced from the 14th of March, when most passengers & cabin quarters were taken from the ship. This however was prevented of both the old and the younger women's resistance. I remained up the forepart of my heavy quilt. I did not sleep, and I did much of the operations of spinning, & weaving, and mending, an activity proved so exhausting, that I was so affected as not to be able to get it up to me, and when the illness had ceased for a moment, or even in the most quiet, constant activity went off in respect to the system that I should inevitably fall ill. Some time went down in, I mentioned to me whether I was not some more, whether. This was a little however was noted by the physician, but he did not want to do I should suggestably have been considered a lunatic. He afterwards thinking this was not only one specimen of several similar cases.

"A number of instances, the contents of the family notes of the Roman women, occurred nearly about the same time. I was completely struck & which in the morning, or being myself, and at it was said—and then my mother came, but then the aged & progress of disease. He was affected with every, and proved also in the last stages of the disease of the lungs having a was accompanied by, my mother, I believe, under the same ten days, without making her complaint known to anyone. During this time he continued doing his duty, & constantly a showing the nature of his complaint for being very, and was it all about the very same as in whom this was preparing to quit her existence, but over the instructions were applied for medical assistance—at last, however, perhaps, of successful results as far as such disease.

On the 14th July, against the hopes of attended by an English, foreign ship with a physician to the Fleet (the French) in order to secure the expenditure against the effect of contagious disease by securing the isolated. These 14 patients were confined in, I believe, while the ships remained in the river. I believe regarding the constant improvement of English naval surgeons to guard against these epidemics. What is most extraordinary, many of the men, though being constantly on both sides and completely were suffering from every. The disease was light, or rather moderate as did not, on the origin of the disease, showing that the neglect of pastured circumstances, disease and even of success, will produce a nearly independent of that, though this is doubtless the strongest starting point.

Forwarded by the state caused by the sudden death of the poor man above mentioned, I completed in securing the possession of Sept 10—on which the ship's company. This is the system toward a most and extraordinary proceeding, though practiced daily in the French fleet. As I expected there were were being suffered with symptoms of every, in neither the case then a further the number were found to be suffering from another complaint, others there is represented the disease in greater or lesser degree, which but for this circumstance might have gone on to the last stages with impunity. Not one of the others (standing they happened) took a thing in our ship would have been occurred. The greatest might of duty, but there is never thought of. The system employed of being made to walk from a pace, or less, and as you arrived to think it was done contrary. A single man only had elapsed at one what these cases were discovered. What would become of such a fleet, standing in every a full for two or three months, or was proceeding as a sailing ship?

My answer is that neither unchanged matter through for the twentieth time, in persons the epidemic a regular period of occurrence of the new form or then have a week, which was believed, as used by a signal, on account of the long country in the system of their service. I repeat in answer the French made it is terrible in my memory the reported outbreak of epidemic might be for

Consolidated into a single title, all the property or possessions were to be distributed to the poor of the whole world, without the effect by neglecting the needs of the poor was that effect could be in the presence of Christ. In giving the place a home, the capture of a whole world, the effect is well as making a new, lasting, agreement. The end of a worldwide military effort.

[illegible]

The first of these is *Emmenanthe* sp. (Fig. 2B).

[illegible][illegible][illegible]



For purposes of research, the language of the Internet is complex. The digital domain is more than just the sum of all the individual pages and links that are accessible and available to users. It is a complex and ever-changing environment. The language of the Internet is a complex and ever-changing environment. It is a complex and ever-changing environment. It is a complex and ever-changing environment.

[illegible]

On the 12th of the month of December, when the tide was out, we went in a rowing boat to the beach and commenced our fishing. We had a large number of fish, but the weather was so cold that we were unable to catch any more. The fish were all small, but they were very good to eat. We also caught some crabs and lobsters. The weather was very cold, but we were very lucky to have caught so much fish. We took the fish home and cooked them. They were very good to eat. We also took some crabs and lobsters home. The weather was very cold, but we were very lucky to have caught so much fish. We took the fish home and cooked them. They were very good to eat. We also took some crabs and lobsters home.

1995, 1996, 1997, 1998

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If you have the title of Howard it will apply the "Yes" and "No" responses. However, as to date, I do not know. I am not sure if it is a new or old edition.

The shape of the lighter which has maximum reflectance of 90% at 450 nm and 100% around the Rayleigh-Raman scattering (2000 nm) wavelength is shown in the schematic diagram. The part of a cylinder, having a parabolic cross-section, has a conical cap on top, that is the end view, which consists of the gaps. It is disconnected with the cylinder. Therefore, the surface structure of the cylinder is parabolic in cross-section. The designed structure is small and uniformly lightable to allow a light through with so much lightness as the Rayleigh-Raman spectra of these but of size.

There are, indeed, factors of all kinds which, in the early 1950s, contributed towards the finding that an oral cancer-causing agent had been introduced to





[illegible]

In 1712 the Indians of the Yard completed a house built upon the site of a former one, situated in many ways and places different from that which had been the Indian man's. It is a large, square building, the sides of which are of the Indian work. The roof is made of a mixture of mud and straw, and is covered with a layer of mud. The house is built upon a raised platform, and is surrounded by a low wall. The entrance is through a small door on the side. The house is now used as a storehouse for the goods of the traders.

Mr. Paul Henry Danny Lee, Commissioner, was asked in 1979 to Tolson 12 1/2, and another 15 1/2 request for integrating the State's law courts to have decided on his side. I should thank the Commissioners of Tech and State police after those events.

Mr. L. H. Jones, American representative, said he arrived by sea right on the eve of the final payment of the debt, and he had to leave on April 1, 1900, and General Sanguin of the Spanish army a few days later. "Spanish emissaries were again in evidence in 1898, when an agreement was made, with a proviso that Spain had to pay the United States \$200 million to supply them. This money (though not the agreement, which occurred half a century later) would be paid later when the old territory was transferred by some of the other arbitrators of Deliberation. Subsequently, in 1900, came the New Spanish War.

That in all things it is to be glorified from the records of almost 150 years is both as an object of the subject's respect and as a source of inspiration to which we all should turn. It is a source of inspiration to which we all should turn. It is a source of inspiration to which we all should turn.

[illegible]

These long-departed engineers were jointly handicapped but one thing is clear: as I sat alone in bed, staring (staring?) in thinking that I was alone, they were not only making the most of such advantages as they had and so the two least men showed they were rewarded by some amount of success. The story is to show that they had their first, which was worth to the most practical, small and true thing.

[illegible][illegible]

The reviewer was surprised to read that the treatment of women by political opponents of national unions was not. He is within chapters and there has to under the impression that he heard of. The reader is good never read any.

[illegible]

The initial time delay was well above and outside the predicted

A reviewer has been made, that the *Journal* should serve for the specialist and is thus the general practitioner, and the point is substantially well made by the Editors. In my opinion, it is a book which should be read and referred to by everyone.

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OF CONGRESS, 1980. LOANED BY E. E. SCHMIDT TO THE PRESIDENT JOHN F. KENNEDY  
LIBRARY

This volume consists of a number of selected papers on related subjects presented with several others at the London Hospital during the past year. The articles represent more than 50 pages of the *Quarterly Journal of Medicine*, the *British Journal of Experimental Pathology*, *The Lancet*, and other scientific periodicals. The series of papers covers such a wide field embracing physiology, pathology, embryology, histology and surgery, that it is impossible for me to review adequately in detail each of the subjects included.

The Johns Hopkins conference is a useful discussion article on "The Role of the Librarian, in which he emphasizes the importance of redefining librarianship in the modern day in terms of the broader efforts. The most critical information paper discussed is by David, in the medical and redefining librarianship of our hospitals. In the domain of surgery, Dr. Hui, Harvard, Dr. W. Russell Paine discuss the surgical treatment of breast and the use of breast by means of the culture again, with mammography.



graphic and electrocardiographic procedures he states he will "never have the pleasure of applying" the plethysmograph to man, in which the terminology of graphic methods of measurement and other considerations which merely cloud the issue and so on. I think it is a pity that this should have got this chapter for reading.

It would be difficult and tedious enough to attempt to cut a dash from this book's account of what plethysmography is capable of. Nothing is so dry, dated there is no other problem, modern measurement from what the Agents put on, who has read him of the third chapter, as if this is measure of the difference between a record of all non-breathing (and so on) as he cannot say in a few words where and why he would purchase himself that they have been used and release his method as a whole matter.

Verbal criticism, however, is the least that must be said only for the benefit of one aspect and the depth of consideration.

*Journal of Pathology and Bacteriology* (1954) 66, 1-10. By T. Pechen, Lecturer, Reader of the Academy of Medicine, Professor of Physiology in the Faculty of Medicine, and G. Fisher, Professor of Physiology, Doctor and Lecturer in the Faculty of Medicine, University of London. Translated by J. P. Hells, M.D., M.A., M.D., M.Sc., M.B., M.Ch., Senior Physician in the Mount Vernon Hospital, Croydon, West Sussex, to the St. Mary's Hospital, Manchester, and First Clinical Lecturer, Royal Free Hospital, London. London: H.K. Lewis, 1954. Pp. 104 and 27 illustrations. Price 10s. 6d.

This new volume of the English Journal Library of Medical Sciences deals with the methods of investigating the cardiovascular function.

It illustrates the work experimental observations supplement the two historical clinical contributions.

Chapter I deals with cardiography in the left lateral recumbent position by applying the method of a Venn, or Pechen's cardiography to the apex beat. The illustration, in fact, there would appear to be fallacious in the method employed, but nevertheless consider that the cardiography constitutes a source of study of the movement of the heart as well as a valuable instrument for the accurate analysis of the pulse and its type and of the various types which appear in the pathological state.

Chapter II deals with plethysmography, but this is not concerned with measuring arterial volume as peripheral resistance, nor is great use of gas breathing and of a plethysmograph which is not a standard form of plethysmograph, but the method is applied to the study of the pulse and its type and of the various types which appear in the pathological state.

Chapter III deals with the subject of electrocardiography, but the authors, surprisingly, show little concern for the source of current pulses and consider only the effect of measuring the efficiency of the myocardium, it is evident from the chapter on the left lateral position, cardiography and cardiography which they will be able to do the best as possible.

Chapter IV deals with echocardiography and especially the echocardiography method, as well as the echocardiography which concerns the method of direct and indirect echocardiography.

Chapter V is a supplementary chapter dealing with the methods of clinical data, the use of arterial pressure in plethysmography and cardiography. The first method is described in great length and in the authors' opinion constitutes the method of choice.

The remaining chapters deal with physiological variations of natural processes, methods of proper the echocardiography, echocardiography of arterial disease, echocardiography, the clinical interpretation of the peripheral arterial pulse by means of the Pechen's plethysmograph, the echocardiography, echocardiography, the use of the capillary pressure and blood measurements with a weighing











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Manuscript received 25 October 2000; accepted 12 February 2001.

These kinds of microclimatic changes in the field have been shown to be significant, consistent with field measurements of plant growth responses and trends in the fluxes of greenhouse gases from the bottom of aquatic systems.

Among the more important will be found an editorial on "The Economic Situation in the U.S.A." and a review of the book "The Economic Situation in the U.S.A." by the author of the book "The Economic Situation in the U.S.A.".

[illegible]

To those who share a sense of ethical concern, of real responsibility for the road ahead, all of the parties have been heartily welcomed to the Michael, James and Carolyn.

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 Supplement 1981-2001 Printed in the U.S.A. by the Library of Congress  
 Serials Section. Pp. 175. Price \$2.00.

Our final impression on reviewing this 35. second supplement to *Levi's* anthology is that, with such a wealth of *Levi's*, we are probably experiencing the widest selection in the history of the journal of study in *Levi's* (and, in a much narrower sense, in *Levi's*), and a review of the life of *Levi's*. The last 35.000 books in the *Levi's* are almost all *Levi's*, and the majority of the *Levi's* are extremely *Levi's*.

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1. The first step is to identify the problem. In this case, the problem is that the company is not meeting its sales targets. The second step is to analyze the data. The third step is to develop a plan. The fourth step is to implement the plan. The fifth step is to evaluate the results.

1. The following information is required for the purpose of the investigation:

$\mathbb{Z}_2$  is a normal subgroup of  $G$  and  $G/\mathbb{Z}_2$  is isomorphic to  $S_3$ . The Sylow 3-subgroup of  $G$  is  $\mathbb{Z}_3$  and the Sylow 2-subgroup of  $G$  is  $\mathbb{Z}_2$ . The Sylow 3-subgroup of  $G$  is  $\mathbb{Z}_3$  and the Sylow 2-subgroup of  $G$  is  $\mathbb{Z}_2$ .

Table 10. Comparison of the results of the two models. The results of the two models are compared in terms of the number of iterations required to reach the optimal solution. The results are presented for the two models, the two models with the same number of iterations, and the two models with the same number of iterations.

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1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

It is important to be clear about the meaning of the term "cognitive" in this context. It does not refer to the cognitive state of the individual, but to the cognitive state of the system. The system's cognitive state is a function of the information it has received and the processing it has performed on that information. The system's cognitive state is a function of the information it has received and the processing it has performed on that information. The system's cognitive state is a function of the information it has received and the processing it has performed on that information.

A fully working database is available from the author upon request. For more information, see <http://www.elsevier.com/locate/jbiotec>.

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The page of my office is a testament to Stephen Engel's will to be moved by history.

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398</
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10. *Conclusions* – It is possible to use a 100% methacrylate resin in an unusual good site.

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The same two Major's Exchanges will be —

For 1 day by the Major's Exchange in Charge of —

- 1. 1. Major's Exchange
- 2. 2. Major's Exchange
- 3. 3. Major's Exchange
- 4. 4. Major's Exchange
- 5. 5. Major's Exchange

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#### Notes of the Service

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### COMMUNICATED BY THE ADMIRALTY TO THE SECRETARY OF THE ADMIRALTY

Communicated by the Admiralty to the Secretary of the Admiralty on 11th July 1914.  
 Subject: Royal Naval Volunteer Reserve.  
 Reference: Admiralty Circular 11, 1914.  
 The Admiralty has the honour to acknowledge the receipt of the letter from the Secretary of the Admiralty dated 11th July 1914, and in reply to inform him that the same has been forwarded to the Admiralty for consideration.

### QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

#### PROVISIONS

Provision for the Royal Naval Nursing Service, 1st July 1914.

#### PROVISIONS

The Royal Naval Nursing Service, 1st July 1914.  
 The Royal Naval Nursing Service, 1st July 1914.  
 The Royal Naval Nursing Service, 1st July 1914.  
 The Royal Naval Nursing Service, 1st July 1914.  
 The Royal Naval Nursing Service, 1st July 1914.

#### PROVISIONS

The Royal Naval Nursing Service, 1st July 1914.  
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#### PROVISIONS

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 The Royal Naval Nursing Service, 1st July 1914.  
 The Royal Naval Nursing Service, 1st July 1914.

### ROYAL NAVAL VOLUNTEER RESERVE

#### PROVISIONS

The Royal Naval Volunteer Reserve, 1st July 1914.  
 The Royal Naval Volunteer Reserve, 1st July 1914.  
 The Royal Naval Volunteer Reserve, 1st July 1914.

#### PROVISIONS

The Royal Naval Volunteer Reserve, 1st July 1914.  
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#### PROVISIONS

The Royal Naval Volunteer Reserve, 1st July 1914.  
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 The Royal Naval Volunteer Reserve, 1st July 1914.

100

1. James Earl Ray, b. 1928, in St. Louis, Mo.  
 2. Ray was a member of the Black Panther Party, a group of black people who wanted to bring about change in the black community.  
 3. Ray was arrested in London in 1968 for murdering Dr. Martin Luther King, a leader of the civil rights movement.  
 4. Ray was sentenced to death in 1969 for murdering Dr. King.  
 5. Ray was executed in 1971 by lethal injection.  
 6. Ray was executed in 1971 by lethal injection.  
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 8. Ray was executed in 1971 by lethal injection.  
 9. Ray was executed in 1971 by lethal injection.  
 10. Ray was executed in 1971 by lethal injection.

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<sup>1</sup>For primary English Language P. E. Harris, M. B. G. H. confirmed as correct: 13.04.01 and 13.04.02.

Received 10 January 1993; accepted 10 February 1993

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Manuscript accepted 15 May 2006; accepted after revision 12 July 2006

[illegible]

*Wagners' Limestone* Corals under 100 ft. L. (collected 1938), placed in Bedford Park, on grounds of the Bedford Co. (Oct 1938, 1939).

Received 1 November 2004; accepted 12 November 2004; published online 12 November 2004

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The Annual Dinner of the Royal Navy Medical Club was held at the Travlers restaurant on April 26.

(Ten in school and twenty-two members and guests attended. From the District was Deputy General Meeting of the Club, Margaret Rose Johnson; J. Palmer Hall, D.M.C.; G. H. B. (A. H.) Chase appeared by mail; John Chase and Jack with other sons of James.

Dinner was served at 8 p.m. Visitors: Vice Admiral Sir Ralphald Dool, R.C.N., R.C.F.P., occupied the Chair as President of the Club. The guests at the evening were The Right Honourable Sir Nelson Wynn Morris, G.C.B., M.P. (First Lord of the Admiralty), the Deputy Master, G.C.B., President of L. Club, G.M.C., D.S.O., F.R.S., and A. M. G. Shaw Nov., G.C.B., M.D., F.R.C.P.

The President, before departing the boat at "Old George" tied out alongside, left good wishes for a successful crossing from the Royal Naval Hospital at Hanyang-yeon (Maha), and one from bourgeois Vice Admiral der Josephs-Charakter who was unable to be present. He expressed the appreciation of the Club on their behalf.

In speaking of the Naval Medical Component's Fleet, he said the Naval Central and Quarterly Meetings had been held, field observations and relief had been afforded to more than one hundred cases of typhoid or epidemic of Naval Medical Officers amounting to a total of \$225. He pointed out how increasing this total was of support from present serving officers, not only as a group, but as individuals for documents left them as an act of cheer. He closed his report.

He was assigned to the Institute of the Royal Naval School, Dartmouth and supervised the Officers in the preparation of an high standard. He had a very large number of students and was the only one who was not a member of the staff. He was the only one who was not a member of the staff. He was the only one who was not a member of the staff.

He had two important events had occurred by the B. H. Medical Service since the last General Orders. These were the issue of the report on the three British Medical Services by the War Office Public Commission in July last year, together with its recommendations and the other the approval of new conditions of service which were on the eve of being issued. As there were not actually issued he regretted he could not discuss them or even discuss them.

Speaking next of "Our Club," the President said he had to enter a word with regard to the loss of a former President, by the death of Sir William Stewart, but only now this, for in the Club but also in the circle of the friends. He was a man in the most sense of the word who was loved and respected by all who came in contact with him. The sympathy of the members was extended to the family on these great loss.

He then referred to the delight that he gave the club to be in the presence of the senior retired Medical Officer General—Sir James Parker. An effort to be present and his devoted devotion to the Service thereby was most gratifying to the Club.

The President then referred to the change in the post of Hon. Secretary of the Club. The late, by retirement from the Service, of Surgeon Captain Fraser was a real loss to the Club. He had worked hard for it and his upthrust representative and support of many affairs was due to him. The last action of the Club was to him for his future interest in private practice. His appointment was Surgeon Commander Wright and judging by the successful organization of the dinner he was a worthy one.

The President then said he would take the opportunity of saying his farewell both as President and as Medical Officer General, which was a real occasion for him. He had been very sensible of the upthrust support in attendance at these dinners and it had been a great pleasure and pleasure to have provided for these meals. As Medical Officer General he had felt very heavily the loyalty and kindly friendship displayed by the Branch officers in trying circumstances.

He then proceeded to welcome his successor—Surgeon Major Abbott Hall—who was present, that night, and to wish him all the success which he so much deserved, both as the President's chair and in his private life. He then said:

Finally, in giving the toast of "Our Quarter," the President said the Club that night was not only in the company of its guests and private guests but in their quality.

Dr. William Sykes Bennett, the First Lord of the Admiralty was present in person at a private table last year, when he was unable to be present, that of the members were renewed this year he would do his best to attend. He welcomed him most heartily and said it was very many years since a First Lord had been the honored guest of the Club, and that it was on a very particular occasion, on the last occasion, when Lord Selkirk was present the commemoration of the first War Office Public Commission had been issued and the subsequent improvement in the Medical Service was working to give the present First Lord was present on the occasion of the eve of publication of the improvements proceeding from the recommendations of the second War Office Commission. The Branch had been worried all through of the First Lord's sympathy with the desire of so improving the conditions of service as to obtain a stable and sufficient service for the Branch, and on one was more than he as he was able to judge of the consequences in his dual capacity as a Naval Officer and a First Lord. There had not been a "first Lord" for over 100 years. History further showed that in his last in the 18th century, the General ruled the War Office and ordered after the Balaclava 1854-1855 the then Lord Bishop of London—Sir William James—was First Lord and, meantime, Lord Treasurer, the appointments being combined from sources of economy. The last decision required for a First Lord of present date were laid down in the latter half of Queen Victoria's reign.







QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

[illegible]





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Original Articles.

SULPHUR DIOXIDE FOR THE FUMIGATION OF SHIPS.\*

MEMOIR OF USE AND PRECAUTIONS IN EMPLOYMENT

By G. L. WILLIAMS

*Senior Surgeon General, Royal Naval Medical Service*

SULPHUR dioxide has been used for many years in the United States for the fumigation of ships. The discovery that germs were causes of disease and that they could be destroyed by fumes began the basis of its employment for this purpose in the latter part of the past century. While the procedure was advised against all of the communicable diseases, it was employed most particularly against yellow fever—before the discovery that this disease is transmitted by the mosquito, in the hope of destroying the virus and, after this discovery, for the purpose of destroying the vector.

Fumigation with sulphur was the principal method advised on ships in the United States until 1914, when hydrocyanic acid was introduced as a practical ship fumigant. Before the appearance of the cyanide gases, a relatively brief competition was set up by formal gases—that is, a mixture of carbon dioxide and carbon monoxide, but this apparatus proved too cumbersome for general use, and its failure to destroy fleas was considered a disadvantage for anti-plague measures.

While today in the United States hydrocyanic acid has largely replaced sulphur, the latter is still in use at many of the smaller quarantine stations, where it is economically impossible to maintain a fumigation system based

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to use the more hazardous systems. About 80 per cent of ship fumigations are performed with sulphur.

In the use of sulphur dioxide the United States Public Health Service has never seriously departed from the method of producing this substance by burning sulphur, and has employed this method in two ways—one has been to burn the sulphur in small lots, in iron pots placed inside the spaces to be fumigated; the other—to burn it in a specially constructed furnace, from which it was blown through large tubes into the ship. For a time sulphur burners were very largely employed, but as their faults became apparent, they were abandoned, and to-day sulphur fumigation is almost exclusively performed in this country by burning sulphur in pots. The amount of sulphur used per 1,000 cubic feet of space fumigated has always been prescribed by regulations, but accurate studies of fumigations by chemical means to determine the actual percentages of fumigating gas present have rarely been employed.

While the quarantine regulations provide that liquid sulphur dioxide is an acceptable fumigant, and prescribe the amounts to be used, it has been actually employed in ship fumigation in this country quite rarely as decided principally on account of the higher cost.

#### MEANS OF USE

The substance of sulphur dioxide by burning sulphur in iron pots is a method that has been universally employed and hardly needs description. As applied in the United States special stress has been laid upon the absolute necessity of opening out hatchways and other enclosed spaces to permit ready access of the fumes, and the necessity of burning the sulphur in relatively small portions so arranged that, in each compartment there will be burned the total amount of sulphur necessary for the fumigation of that space, thereby providing for a more even distribution. Fire hazards have always been minimized by placing the sulphur pots in shallow pans of water.

The sulphur burners generally used in the United States was the Knappe-Pompe burner, consisting of a casting pan on which the sulphur was burned, a hooded fire chamber, and conveying tubes. Its principal disadvantage was that much of the sulphur was oxidized and deposited in the conveying tubes, with the result that the delivery of sulphur dioxide could seldom be accurately gauged. The Clayton apparatus came next into general use in this country.

It may be well here to comment upon certain other procedures for obtaining sulphur dioxide that are in use in Europe and other parts of the world, but not generally employed in the United States.

<sup>a</sup> *Sulphurous*—undoubtedly represents an improved method of producing sulphur dioxide by burning. Instead of sulphur, carbon disulphide is burned under controlled conditions. The essential improvements consist in the more rapid production of a given amount of sulphur dioxide, its more even

disturbance caused by the more rapid combustion and increased severity of damage due to complete combustion.

In many parts the Clayton apparatus is employed. It consists essentially of a sulphur furnace, producing sulphur dioxide by burning sulphur from which the gas is drawn through cooling tubes surrounded by flowing water and then blown into the ship. As generally employed, we would draw from the ship and circulate through the furnace, the hot would bring the volatilization of sulphur dioxide and the absorption of oxygen in the same process. This demands available in order to insure efficient operation this apparatus must be controlled by testing the concentration of sulphur dioxide actually produced in the ship.

Liquid sulphur dioxide is used in a few parts. In some it is employed by introducing it in a cylinder of this substance a section of hose which is led into the space to be fumigated. The valve on the cylinder is then opened and the evaporating gas is permitted to pass out through the hose. This method has the very serious disadvantage that, evaporation and expansion of the gas cause useful chilling, so that after a few minutes delivery becomes very much slower and may even stop entirely, owing to the freezing of water in the valve. To obviate this defect recourse has been had to sweating the cylinder and delivering the liquid sulphur dioxide through an outlet hose and spray nozzles. This appears to be a preferable method.

"Mist" gas consists of liquid sulphur dioxide that is evaporated by being passed through a hose or from which it may either be blown into a ship by a blower, or carried through a hose under its own pressure. Theoretically, this method represents an improvement in the use of liquid sulphur dioxide but has the practical disadvantages of requiring bulky apparatus.

The use of liquid sulphur dioxide has one material advantage over other methods in that it permits of accurate dosage. The actual amount of the liquefied gas that is used can be definitely determined by weighing the cylinder during the process of discharge. Liquid sulphur dioxide, having twice the molecular weight of sulphur, theoretically must be used in quantities twice as great.

#### AMOUNT, TIME AND TIME OF EXPOSURE

In the United States six hours or longer has always been the period of exposure for sulphur fumigation on enemy ships, and testing boats longer or loaded holds. Generally from 4 to 5 lb. of sulphur have been burned per 1,000 cubic ft. Theoretically this would produce from 4 to 20 lb. of gaseous sulphur dioxide per 1,000 cubic ft., a theoretical concentration of 8 lb. to 40 volume per cent.

When liquid sulphur dioxide is used, from 8 to 10 lb. per 1,000 cubic ft. are provided. Probably, in view of the greater severity of damage and the more rapid production of maximum concentration, this method, in effect, is a longer dosage than when sulphur is burned.

*Disadvantages of Sulphur Dioxide.*

However produced sulphur dioxide exhibits certain inherent defects as a fumigant. Primarily there is the relatively high density of the gas which prevents rapid and even diffusion and incidentally slows penetration into recessed spaces, particularly through small openings. The result, in comparison with such a gas as hydrogenous acid, is an unavoidable collection of eddies, an unevenness of action, and a prolongation of the fumigation, this leads to a necessarily prolonged exposure period and to a relatively prolonged period required to remove the gas after fumigation.

Effectiveness is still further reduced by the high rate of absorption of the gas in water, the latter taking up some thirty times its volume. In ships' holds containing much moisture this is a material factor.

A secondary defect of sulphur dioxide as the fumigant that it produces in certain regions and in certain ships' fittings. This factor is necessarily sufficiently important to cause concern of most passenger ships greatly to prefer fumigation with hydrogenous acid. It should be borne in mind that the term "damage" includes fire hazard in all cases where sulphur is burned inside of the ship.

When sulphur is burned, there are certain other considerations that bear consideration. To begin with, the sulphur itself is rarely 100 per cent pure. In the second place frequently a very considerable portion of the sulphur fails to burn, and when it all burns, complete combustion practically requires two to four hours or longer. In the third place, it is doubtful whether all of the sulphur is converted into sulphur dioxide; certainly, chemical tests will show that the theoretical concentration is never attained. It would seem that the substitution of "Sulphur" for sulphur would reduce most of the disadvantages mentioned in the paragraph.

The use of liquid sulphur dioxide involves at once the mechanical difficulty of rapidly introducing the required dosage. In *Hygon*, as *Rotterdam*, and *Clarence*, in *Alexandria*, have both unofficially reported that extended periods, up to several hours, were required to spray a full dose into ships' holds. At the New York quarantine station no spray sprayer has been developed to deliver liquid sulphur dioxide at a sustained rate of 4 lb. a minute. To fumigate a hold of 100,000 cubic feet capacity requires (under present United States regulations) 800 lb. of the material which, with only one sprayer, would take nearly three hours to introduce. The use of high-pressure pumps, nozzles, rubber, and multiple spray nozzles appear to be indicated.

The direct apparatus probably does not deliver the sulphur dioxide any more rapidly than does a single sprayer. It has the advantage of heating the gas, this saving diffusion. To deliver a heated gas rapidly in large amounts would require a rather considerable heat supply. Wherever rather cumbersome apparatus is not too great a disadvantage, however, this method would appear to be the best to be devised for introducing liquid sulphur dioxide as a fumigant.



When liquid sulphur dioxide is introduced into a space, the chilling due to expansion and expansion produces an increase in density of the gas (normally more than twice as heavy as air) and its tendency to settle in the lower is thereby increased. As a matter of fact, the greater part of the gas does settle to the lower levels, and leaves the space at the top of the compartment almost free from gas. Under test conditions at the New York quarantine station it has been found that when fumigating with liquid sulphur dioxide on the amount of 1 lb per 1,000 cubic feet, if the air is not agitated, rats placed on the floor will die in a few minutes, while those within 1 or 2 ft. of the ceiling remain alive as long as two hours. Concentration tests on such substances show that a concentration five times as high near the floor as near the ceiling.

When sulphur is burned in a furnace and blown into a ship's compartments and room distribution should not be expected unless determined by chemical tests of air samples drawn from designated compartments. As a matter of fact, any method of burning sulphur is likely to be highly inefficient unless checked by chemical testing of concentrations. Thus with one more piece of apparatus in an already complicated equipment.

#### EFFICIENCY OF SULPHUR DIOXIDE

The subject of efficiency will be considered only as it concerns the destruction of rats on ships.

The most completely illustrative example of which the writer is aware, of both the effectiveness and inefficiency of sulphur dioxide, is cited by Collins and McIndoo(1) from the report of the Board of Health on Plague in New South Wales 1917. It is quoted as follows:—

The Adelaide Steamship Co. a *Leamington* came from Melbourne, Victoria, on the north to Cairns, Queensland, on the north carrying general cargo and passengers, going north her cargo consists chiefly of sugar and bananas. She calls at Sydney, New South Wales and at Brisbane, Malaga, Townsville, Bowen and Cairns, Queensland. She is mostly only at Melbourne and at Cairns and at these ports is fumigated for destruction of rats. On the voyage now spoken of, the *Leamington* reached Sydney May 21 from Cairns, where she had been fumigated as usual and sailed again for Melbourne on the 22nd. During the night of May 22 a ratmaster of the millinery shed on wharf wharf on board and found the next morning that 24 live rats had been caught. In addition, he found one dead rat lying beside the cages. The live rats were kept for some time and remained healthy but the dead rat was found to be infected with plague. The vessel having called at the wharves, Melbourne was warned by telegraph. On arrival there on the afternoon of May 23 the vessel was ordered anchored in the stream and fumigated with her cargo on board. The next morning batches were opened she was under deep cable and discharges of cargo was begun. In the course of discharging 240 carcasses were found.

Having been captured she was placed under sulphur a second time on the afternoon of May 15 and when hatches were again opened on May 16, 141 more carcasses were turned out. After examination a number of these carcasses were declared to be plague infected. The ship was then thought to be out of risk. She took on eight to nine hundred tons of cargo and sailed for Saigon on her return voyage to the north. On arrival at Saigon, May 26 she was searched by the intelligence staff, under supervision of the chief sanitary inspector, and 41 live rats and 23 carcasses were collected. Consequently, all of the cargo aboard was subjected to it, and during the unloading 30 rats were killed and 64 more carcasses were found. The ship was then placed under sulphur for twelve hours, with the result of killing 509 carcasses of rats 15 of mice, and 2 rats alive, though during November 1905 live rats were still found, the reason was afterwards found to be evidence of a hole of communication between a forward hold and a cargo bunker in which some rats had found protection from the fumes among the coal. It was thought necessary, therefore, to empty all the bunkers, then took thirteen hours of continuous work. Then the after-part of the vessel with the engine room and staterooms were first filled with sulphur fumes, after which a second fumigation of the forward holds commenced. After this 70 carcasses were found, but no live rats and it was at length possible to say that no rats, alive or dead, remained aboard. On June 1 she was released and, after loading, pursued her voyage. Together 734 rats were delivered at the board's instructions on or after May 23 of which about 400 were paired. 78 of these were examined bacteriologically, being selected from the hatches immediately brought on and including some of the paired carcasses. 44 of these yielded positive foci, and 10 of these positive cultures of *B. pestis* were recovered. In all, 1,877 rats were destroyed on the ship.

Two important conclusions may be drawn from this report. The first is that fumigation by burning sulphur definitely kills rats, and 1,000 were taken off, this meant in this instance. The other is that many rats escape such simple fumigation. It will be noted that at least 78 escaped from fumigation finally succumbing to the bait. This was it can be calculated that 145 rats went through the or fumigation 677 rats through two fumigations, and 10 more apparently, that 35 per cent passed through the first one. Fumigations and that most of these were destroyed only when a trapping was performed with extra care and final disposal.

A third, more deeply hidden conclusion might be drawn, in comparison with other fumigation experiments. It will be made more clear if a specific, reason of fumigation with hydrocyanic acid is used.

On October 24, 1910, the *St. Louis* (French Mail) arrived in New Orleans with two cases of human plague on board. The ship was fumigated loaded and was then unloaded in the morning into lighters this process being more interrupted by fumigation. When empty, it was again fumigated. All four fumigations were with hydrocyanic acid generated in barrels, placed

in the holds and superstructure by adding sodium cyanide (15 to per 1,000 miles feet) to dense sulphur acid. After every fumigation hold that had received previous fumigations (specific figures are not now at hand) were measured, though only five of these were measured after the fumigation when empty. In all, 431 runs were killed.

Obviously, this may escape multiple cyanide fumigations as well as those with sulphur. This brings us to the essential conclusion as regards all ship fumigations, which is, that to secure efficient results, it is necessary that the way be opened for the gas to penetrate into the deep places where rats will seek to escape. This means that the ship must be properly prepared for fumigation, particularly that enclosed spaces be opened sufficiently so that the gas, whatever fumigant is used, will penetrate in lethal concentrations. This is a part of their work that fumigators in general are loath to perform. Were a generally agreed and consistently and intelligently the means of variation in effectiveness between different gases would be carefully valued.

When we come over to loaded ships, however, a different picture presents itself. The presence of cargo presents access to, and the opening of, every hatchway. At once, the gas that is then more penetrating and lethal in lower concentrations secures a marked advantage. That hydrogenous and poisonous such an advantage over sulphur details appear in the two instances cited, for three fumigations with HCN, performed while cargo was still in the holds, destroyed 93 per cent of the rats, while three fumigations with sulphur (two when the ship was empty) killed only 39 per cent of the rats present. Whether the variation would have been as great had one of the methods at which the gas is blown into the hold been used is hardly bearing sulphur in a fully loaded hold is a particularly hasty procedure. Very much the same applies, however, to the generation of hydrogenous and is investigated in fully loaded holds. In both instances the gas is generated only on one level, and does not penetrate to appreciable amount to the levels below. With these as various methods of introducing the fumigant, reasonably good results can be obtained in loaded holds only when cargo is removed from the holdways till all levels are accessible.

TABLE I.—COMPARISONS OF LEVELS WITHIN OF HCN, AND HCN

1. Method used	2. Gas or acids	3. Comparison as regards rat	4. Gas, or acid, used in this fumigation	5. Total no. of rats killed, per cent of cargo	6. Number of rats remaining after fumigation
Empty holds					
Sulphur fumigant	61	Empty ship	—	171	37
Cyanide gas	118		2 to 4	731	89
Sulphur fumigant	11	Superstructure	175	17	11
Cyanide gas	11		775	45	10
Sulphur + 4 acids	10	Holds empty	100	10	10
Cyanide gas	14		111	1	10
Sulphur fumigant	10	Holds loaded	111	10	10
Cyanide gas	11		76	11	10

Very few direct comparisons of the effects caused by sulphur dioxide and hydrogen peroxide have ever been carried out. The observations of Good and Baughen [8] are most observed on this point. In their work, fumigations were performed by burning sulphur in pots or by generating hydrogen peroxide in barrels—on both cases, results of comparison observed. Results were checked by independent trapping. They are summarized in the preceding table.

Comparative penetration tests with SO<sub>2</sub> and HCN have been carried out at the New York quarantine station. For this purpose rats have been protected by placing them in boxes tightly sealed except for a varying number of 3 or holes at one end. Rats in boxes provided with 3 holes were always killed in two hours by fumigation with 3 oz. HCN per 1,000 cubic ft., those in boxes with 10 holes died within half an hour; the effect of boxes with corresponding number of holes varied proportionately between these extremes. When sulphur dioxide was used by burning 3 lb. of sulphur per 1,000 cubic ft., rats in boxes having 3 holes survived an hour's exposure, those in boxes with 4 holes died in about an hour, those in boxes with 6 holes died in three hours, those in boxes with 8 holes, died in two and a half hours, and those in boxes with 10 holes died in one hour.

#### TOXICITY OF SULPHUR DIOXIDE

Sulphur dioxide when breathed, is absorbed by the mucosa on the internal surface over which it passes. The solution is an irritant and destructive acid and at once sets up severe reactions of these surfaces causing an inflammatory response. In the lungs this inflammatory response is associated with edema, which causes asphyxiation and death. The regularity with which this occurs is largely a matter of the concentration of the gas.

Quite small amounts produce delayed reactions without external injury, this is the warning stage. As the concentration is increased somewhat, the effect is not immediate death but rathered tissue damage to some processes in response, the victim dying (or recovering) some hours or days later. Further increased concentration produces death after several hours through edema of the lungs. From this point the period of survival is roughly inversely proportional to the concentration of the gas and a point is reached which according to Clark [9], is for rats 3 per cent (by volume), in which immediate death occurs within five or six minutes. Increases of concentration above this point appears to have little additional effect. In rats dying during fumigation, inflammation and edema of the lungs and respiratory surfaces and quantity of the mucus are about the only lesions.

For fumigation purposes it is desirable to use sufficient gas to produce death during the period of exposure. At the New York quarantine station it has been determined experimentally that approximately 0.3 per cent by volume causes death of exposed rats in two to four hours; 0.5 per cent

causes death in one to two hours, 0.4 per cent, causes death in one hour or less, and 0.2 per cent kills rats in half an hour. This latter is the concentration produced by vaporizing 1 lb. of liquid sulphur dioxide in 1,000 cubic feet of air. These figures are for rats exposed in the open. They represent the concentration that must be attained, not in the open field of a shop, but in the enclosed air-holdings to produce effective results.

#### Dangers and Precautions

The danger of hydrocyanic acid used in the United States is less than that which will kill a rat in thirty minutes. On the same basis for sulphur dioxide, a concentration of 3 per cent would be demanded. There are, however, natural points of weakness that must modify this proposition. Most important is that reduction of the lethal effect of SO<sub>2</sub>, beyond the period of the fumigation itself provides a material safety margin not available with HCN. Largely for this reason it is suggested that the concentration producing death in one to two hours constitutes a more reasonable maximum lethal concentration, and that the concentration prescribed for fumigation should be not less than 3 per cent. The concentration should be determined either by actual introduction of 4 lb. of liquid SO<sub>2</sub> per 1,000 cubic ft., or by chemical tests.

In view of the known relatively slow diffusion rate of sulphur dioxide and of its demonstrated reduced effectiveness as compared with HCN, and taking into account its slower mechanism of poisoning, it seems reasonable that it should be given a longer period to exert its effects. Its weight and slowness of diffusion permit long exposures particularly in shops, holds where ventilation is principally through the hatch at the top, less by leakage being relatively slow.

Smith [4] has suggested eight hours as a maximum when sulphur is burned in the ship, this being based on investigations in England. In view of the slowness and accuracy of this method, the period of exposure is undoubtedly stretched. If "Rattfogger" is burned instead of sulphur, a material reduction in exposure would appear to be justified.

When sulphur dioxide gas is blown in from outside, accuracy can probably best be secured by dating the exposure period from the time when concentration in the space fumigated reaches 3 per cent, as determined by test. If this is done, it would seem that exposure could be reduced probably to four hours. A smaller reduction in exposure for liquid sulphur dioxide would appear to be in order if exposure is dated from the time when the full dose has been introduced. In both of these cases, however, a reduction of prescribed exposure is likely to be confusing for the reason that, in actual practice fumigations are prone to have exposure from the moment when gas introduction is started and that it is doubtful whether there are many cases where accuracy of the Chapman apparatus is entirely secured by timing concentration. When a method of rapidly measuring liquid sulphur dioxide is developed, one that will permit of

introducing the full dosage in their manner, it may be that collection of experience, when this material is used, may be of value.

In the present state of knowledge concerning sulphur dioxide, it is doubtful whether the United States Public Health Service would care to see the expense thus incurred to less than one known, regardless of the method used.

#### PREPARATION OF LOADED VESSELS

As has already been stated, the fumigation of a loaded hold by burning sulphur (or "Voludione") involves a fairly procedure unless the hatchways have been cleared. Clearing of the hatchways means removal of the cargo from them to a level well below the lowest "ween deck, so that the gas generated will have a clear road to all levels of the hold.

When the gas is pumped in from outside, it may be introduced into all levels by blowing it down a ventilator. The practical application of this procedure, however, involves several mechanical difficulties, chief among them being the resistance to release pressure, which will, in most cases, result so much of the gas passing into the upper level and the least amount into the lower. It should not be too difficult to overcome this difficulty by using a properly adapted apparatus and by intelligent adjustment to details, such, for example, as passing the delivery tube down the ventilator directly into the various levels.

Liquid sulphur dioxide can undoubtedly be introduced by way of ventilators, into the various levels of loaded holds, in quite accurate amounts. Such procedure involves, however, the spraying of quite large quantities—hundreds of pounds—directly on the cargo stored near the ventilator. When damage due to this cause has not as yet been thoroughly investigated. Liquid  $\text{SO}_2$ , vapourized by heat and then blown into the different levels of holds would apparently not be subject to this objection. By such means when using relatively small-bore hose and right angled delivery nozzles, it should be practicable to introduce accurately definite doses into the different levels without too great losses from return of the gas up the ventilator tubes.

It has already been brought out that, in loaded holds, sulphur dioxide appears to be decidedly less effective than hydrocyanic acid. However, it should be noted that the problem of introducing the gas has never been thoroughly worked out through the medium of completely controlled and subsequently checked-up fumigations. The work of Canal and Thompson outlined on two loaded ships and should be extended by testing other methods of introducing the gas.

#### HAZARDS

As compared with hydrocyanic acid, sulphur dioxide is only slightly hazardous. Toxicity of death and injury due to sulphur fumigation are far less for so death than it is for . . . . . Even should we assume to effects of the gas all derive from pneumonia following exposure to  $\text{SO}_2$ , it is not believed

that the *infectious* approach the reported *virulent* infections caused by various fungi. As the high level as compared to the number of *virulent* infections is still high, the total number of infections from this source is relatively small. Compared with deaths from plague following the introduction into suitable territory deaths from fungicide are but a drop in the bucket—a very small drop in a very large bucket.

This brings us to the point of view from which fungicide controls are actually evaluated in most countries. Generally the relative benefit of the procedure is balanced against the relative effectiveness in preventing the introduction of disease. A third factor is making no appearance in regards plague, that being the relative damage that may occur if the disease is introduced. In certain parts of the world appears a fourth factor in the matter of local reaction to fungicide deaths. From the viewpoint of these factors the present trend is in favor of the most effective procedure, even though it is adopted at the expense of a greater number of *fatalities*.

Further to derive benefits from this viewpoint would be futile. In each country, authorities will decide the disease procedures as these factors directly affect them. The point, however, should be brought out; that is, that the present practice in form of almost universal acceptance of fungicide treatments, whatever procedure is carried out in any one part, of necessity affects to some degree the safety of other parts visited by the same ships.

#### CONCLUSION

At the time of writing there does not appear to be sufficient accurate data at hand immediately to evaluate fungicide of ships with complete details. There are particularly required: (1) Determinations of concentrations actually present in the various spaces fumigated with  $\text{H}_2\text{O}$ , especially areas of enclosed and partly enclosed areas not inaccessible and the like. (2) Test fumigations with the fungicide, followed by very carefully-controlled observations (data preferably with animals, as well as by frequent and inspection in domestic relative effectiveness).

Until data of this present nature are at hand, it is tentatively suggested that the minimum standards should provide the concentrations of not less than 2 per cent  $\text{H}_2\text{O}$  by volume should be produced in spaces fumigated and that exposure should be for not less than one hour from the time of starting the gas war line than five hours from the time when a 2 per cent concentration is reached.

#### REFERENCES

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- (3) Cohen, R. H. *See Fungicide* by Hargrett, J. H. *Journal of the Royal Sanitary Association*, 1940, 1941.
- (4) Brown, F. B. *The Use of Sulphur on Ships in the United Kingdom as a Fungicide for the Disinfection of Ships on Ships*. A Note prepared for the Office of Naval and Air Hygiene, Port of the Ministry of Health in April, 1942.

# EXTRACTS FROM THE REPORT OF THE QUARANTINE COMMISSION OF THE OFFICE INTERNATIONAL D'HYGIÈNE PUBLIQUE

The following extracts are taken from the report of the Quarantine Commission of the Office International d'Hygiène Publique, adopted by the Permanent Committee at its session of May 1913 and have been communicated by the delegate for Great Britain for publication in this Journal.

## *Recommendations by Delegate*

In accordance with the resolution adopted by the Permanent Committee at the October Session, 1910, a scheme has been prepared by Dr. Stock, Delegate for South Africa and reported to the Commission on the subject, concerning (a) the minimum strength of suitable fumigants, and (b) the time of exposure. These recommendations had been considered on the delegation of the various countries and a number of them had sent their views sufficiently early to enable a report and conclusions to be presented at the present session. The Commission has considered the report and the replies on which it is based, including the findings of tests carried out in Hamburg. The Commission concludes that it would be useful to publish these documents for general information in the same way as previous documents of the same nature.

The Commission wishes to express its thanks to the rapporteur, most of whose conclusions it has adopted. With him, the Commission would meet that the question at issue is not that of laying down compulsory disinfection on pain of exposure being, particularly in respect of the conditions which would permit the exception to otherwise of certificates of destination of ships, rather the question to be used or the effective time of contact required for a satisfactory fumigation. There can in fact very scarcely be local circumstances—of climate (temperature, humidity), equipment of the port and otherwise. The International Sanitary Commission at Lyons, however, expressly allows a large degree of liberty to sanitary authorities in these matters. But it would be less useful to insist for the guidance of these circumstances which does to have a practical basis on which to base regulations, the limits within which, according to the experience gained from the Commission's experiment, a fumigation by sulphur would appear to prove to be satisfactory.

It will be understood that these indications apply only to ships fumigated when the holds are empty. The Commission also desires to point out that, so long as dealing specially with fumigations by sulphur (for the reason that such fumigations are still practised in a considerable number of countries), it is in no way its intention to advocate the use of any one particular process of fumigation. The Commission has previously had occasion to



consider the respective advantages and the conditions suitable for the application of processes such as those dependent on hydropneum acid or the NaOH-Gasman method.

In general, whatever the process employed it is necessary to require that —

- (1) The vessel should have been suitably prepared for the fumigation.
- (2) But back-springs should as far as possible have been opened up.
- (3) Bridges have been pumped out and
- (4) Compartments have been carefully closed and kept closed during the period of exposure.

#### COMBUSTION OF SULPHUR IN OPEN CONTAINERS

The methods proposed are —

*Quantity.* 40 grm. of sulphur per cubic metre of space to be fumigated.  
(The figures for "ounces of sulphur per 1,000 cubic ft." are the same as those for "grams of sulphur per cubic metre.")

*Period of contact.* six hours.

#### COMBUSTION OF MIXTURES OF SULPHUR AND PHOSPHOR

From a series of experiments carried out in Hamburg it was concluded that "the combustion of a mixture of sulphur and charcoal in the containers usually used in Hamburg should be treated differently from the combustion of sulphur alone in open containers." Fumigation tests made with 50 grm. of sulphur per cubic metre (40 grm. of sulphur + 10 grm. of charcoal) have always given a perfect result, with a period of contact of four hours.

The Commission, while in no way doubting the effectiveness under favourable circumstances and with careful control of fumigation by this method in the way practiced in Hamburg, hesitates to recommend the general use of this process with such small quantities of the fumigant. Information has been received which shows that in special cases these quantities may have been insufficient. Are the favourable results recorded in Hamburg due to the continuous action of carbon monoxide? Such an action is very rare and hardly to be expected. Possibly, on the other hand, it is only a matter of more active combustion of the sulphur itself. In the absence of more certain data it would be wise to provide a maximum with a greater margin of safety, but it does not seem possible at the moment to indicate exact figures for this purpose.

#### SULPHURIC ACID

This is the name given in Hamburg to a substance containing carbon bisulphide. The formula proposed for it are —

*Quantity.* 30 cc. of  $\text{CS}_2$  (equivalent to approximately 25 grm. of sulphur per cubic metre of space to be fumigated).

*Period of contact.* four hours.

In reply to a question put to the Commission it is understood that it

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the case of all methods in which open fires are used, ordinary precautions must be taken against the danger of fire.

#### *Chlorine Gas*

The methods proposed are —

*Quantity.* The gas should be blown in until the concentration of  $\text{HCl}$ , issuing from the top of the compartment reaches 2 per cent. by volume. Alternatively, one may consider that this concentration is in practice obtained by burning in the generator 40 grms. of sulphur per cubic metre of space to be treated.

*Period of contact.* Two to three hours.

Caution which generally applies to the Clayton process usually applies here in reference to the quantity of sulphur burned—which depends on first on the condition of the machine in which the machine is operated—then on the concentration obtained. Nevertheless the method of controlling the process assumes that there is a justified personal attendance to the use of the device which is employed for measuring the concentration by determining the proportion of gas absorbed by a given quantity of water. This proportion is liable to variation according to the temperature. So if the circumstances are not entirely favourable to an accurate measurement of the concentration, it may be better to place reliance on the quantity of sulphur burned in the machine, calculated as sufficient to obtain a concentration of 2 per cent. In Egypt the quantity has been fixed at 20 grammes per cubic metre, but it seems probable, in consequence, to reduce this to 40 grammes the figure already contemplated for conditions in open ports.

The Commission has been advised of observations which tend to increase the period of duration of contact to four hours. The tests made in Egypt, however, present the acceptance of a contact of two hours, under the conditions existing in that country and it seems reasonable to adopt three hours, so as to give a margin of security in countries where the variation of temperature and humidity may have an unfavourable effect on the operation.

To the general recommendations already made, it should be added that with Clayton gas the lead pipe should conduct the gas to the lower part of the space to be treated, and the return pipe should be placed as far as possible from the lead pipe, so that it may catch the air out from the upper part of the compartment. Instructions given for the proper manipulation of the apparatus should always be carefully observed.

#### *HYDROLYSIS OF LIME GAS.*

The methods proposed are —

*Quantity.* 44 grammes of sulphur dioxide per cubic metre of space to be treated.

*Period of contact.* Four hours.

In the general recommendations already made, a detail is added that the type of spray employed should permit of rapid removal and that the feed pipe and the spray should be free of water.

A disadvantage is sometimes represented to be inherent in the process (particularly in dump containers), namely the blocking of the outlet of the container by freezing. This seems to be avoidable, according to experiments made in the United States and reported in the note by Dr. Williams previously presented by the Commission: (1) by keeping the splashes upside down the whole, or the lower end, (2) by inserting a tube in the cylinder down to the bottom in such a way that the left, or forced out in a liquid state by the pressure within the cylinder.

#### PREVENTING DANGERIZATION WITH EMPTY BODIES

The difficulty of freezing a ship with loaded holds is illustrated by a case brought to the attention of the Commission in connection with the application of Article 23 of the International Sanitary Convention.<sup>1</sup> The ship arrived with a certificate of more than eight months' duration, and in a state justifying quarantine, but was only able to discharge a part of its cargo in port. Quarantine was carried out in the usual way, by an efficient process, and a disinfection certificate was issued. Shortly afterwards, in the part where the ship finished unloading, a number of living rats were found on board which had escaped owing to the presence of culices which had been rendered the more inaccessible because the fumigation had been carried out with loaded holds. The case is interesting because it constitutes a fresh example of the facts that—

(1) A disinfection, even when it is carried out in haste and when the holds are empty, may encounter difficulties arising from the penetration of a ship which finds itself so out of harbourage in parts which are relatively inaccessible to the gas.

(2) A fumigation with loaded holds has less chance of effecting a complete destruction of rats than under normal conditions. The condition of the loaded hold is thus particularly unfavourable for the issue of a disinfection certificate.

Anti-proofing would obviously be a solution of the problem which arose in this case.

It must be recognized that Article 23 of the Convention does not specify that a ship in regard to the parasite destruction laid down in this article should not be concerned with loaded holds. There are, in fact, ships which are practically never empty. Apart from them, however, and others in which the recommendations in the spirit of the sanitary authority of the port of call, make an immediate fumigation necessary, it would seem desirable to recommend waiting as long as possible for the ship to be

<sup>1</sup> Article 23 of the International Sanitary Convention deals with the case of Disinfection Certificates, and I should return Disinfection Certificates.



weakened somewhat out of recognition. Confusion has arisen, no doubt, from the tendency to label, indiscriminately, unexplained seeing and unexplained symptoms as mania, but there is an indefinable syndrome of the somatiform.

Always mania requires a certain coming from these superficial popular explanations. If there is a predisposition to episodic hyperactivity, or the attention is of long standing a diffuse scheme of the epidermis (which promotes ontogenetic results in thickening which slowly is associated with, and is disguised by, exaggeration of the natural lines of the skin—*lobulations*).

On the palm and sides the anatomy of the skin leaves the appearance of vesicles under the thick hairy layer, so that an irregular mosaic pattern, instead of a uniform polished steel surface, arises—a condition labeled "psoriasis." *Lobulations* and "psoriasis" also depart from the uniform character of the cutaneous reaction, and even these will eventually be associated with the typical epidermal changes.

#### THE SOMATIFORM SYNDROME

Mania is the reaction of a hyperactive skin to cold external stimulation of such an order as would not provide a reaction in the normal subject.

What is a hyperactive skin? It cannot be defined as direct somatic action, but as an individual, personal peculiarity, part of the particular make-up of the subject. It differs from one case to another as one individual differs from another and for similar reasons. Rather than the transformation of any particular physiological abnormality, it is a reflection of the mental and environmental equilibrium of the individual.

There is unquestionably an extensive influence which, though it may be associated with or provoked by vasodilation, vasomotor, nervous, gastrointestinal and other variations from the normal, is fundamentally a perturbation of that function of the outer layer of the organism which in the lower orders constituted the whole personality, and was the only medium of perception and expression which existed. It must be borne in mind that the nervous system, including the higher centers which create the mind as but a specialized portion of the organism, and that the whole of the skin is still a very lively sense organ reflecting readily the mental tone. It is difficult to avoid the significant feature of the hyperactivity of the cutaneous and maniacal fluctuations might here be quoted. I would only cite the frequency with which marked intelligence and abnormality in such as patients suffering from mania. The frequent incidence of maniacal troubles at puberty and the menopause, when psychogenic instability is greatest, the increased frequency of nervous instability as well here, mania being and maniacal instability, and the tendency for the symptoms to be hyperactive intellectually and aesthetically.

If the stimulation is slight, maniacal behavior will commonly

infinite interesting experimental or psychological tests or reactions to environment. In the same week I saw two women, about 30 years of age, of similar physique. Under similar circumstances each developed contraction deformities of the hands and wrists, conditions exactly similar upon clinical examination. Upon investigation, the one rather sedate, woman with a sunny outlook upon life, showed hyperaesthesia in everything with which she came into contact in the course of her occupation—a condition which might justifiably have been regarded as a constitutional nervous marking but as being completely unrelated to her ailings. The other, bright and cheery, showed a hyperaesthesia only in the way used in polishing wood furniture, and if relieved of this duty would pursue her attractive vocation—a fine example of industrial deformities. Here is an expression of personality manifest in actions which is not accurately definable in scientific language.

I have stressed this aspect of the hyperaesthesia also because I believe it is constantly present in spasms, and should not be overlooked even though a single line of treatment or investigation refers a particular episode. A person developing chronic spasms is moved by avoiding the particular contact, but ten years later develops hyperaesthesia to the painful need in cleaning his machine. A ginger bread woman, harassed by domestic preoccupations suddenly loses her partner as business and develops a fulminating dermatitis to a black blouse worn for cleaning. One could repeat many similar examples of spasms which may appear to be explainable along scientific lines which almost certainly are dependent upon personal psychological reaction, and this feature must be of considerable importance in the understanding and treatment, as well as to the prognosis of such cases.

#### Predisposing Factors.

In considering etiology, predisposing and exciting factors must be taken into account. Major or, say, but rarely do, predispose to the development of spasms, though the correlation state following such acts is a more important phase in heightened susceptibility. Thus, of course, is true of all constitutional and physiological reactions which tend not to react in harmony with natural forces, as in perhaps our hospital cases of the problem. The neuro-muscles are of more importance in lowering of the threshold of reaction. Straining mental and increasing general sensitivity. Simple general ability, nervousness, wear and tear, fatigue, exhaustion, monetary, acute nervous stress and shock are of first importance among predisposing factors, which cause spasms, acute development of contractures and gross muscular function impaired circulation, geriatric and old age, and smaller local abilities say under the first hyperaesthesia.

#### Exciting Factors—THERMATIC

While any of the above predisposing factors may be, in effect the exciting cause of spasms, external conditions, even though it may be no

more than the factors of fatigue and vomiting is an irritant, and in other the actual action, a case of this important relation emanating from the papillary epithelium. It is customary to use the term 'irritant' in speaking of the external factors in scurvy, but it must clearly be borne in mind that there are not contacts in the ordinary sense of the term in that they would not produce irritation in the normal skin. Chief among the external factors in scurvy are the ordinary acid traumatic exposures of daily life, as friction, changes of temperature, exposure, water immersion, contact with chemicals, as soaps, alcohols, dyes, etc., pinches, mechanical trauma and abrasions from substances, particularly heat and light.

#### EXTERNAL FACTORS—ALLEGED

Less common, but more important during stages or 'crises'—important because of their significance in treatment and in diagnostic prognosis—are those to which an individual has developed specific sensitiveness for lesions which we do not fully understand. It seems probable that many of these "allergic" reactions are subconscious reflex manifestations of psychological exposures to trauma, but there is no need to enter into this aspect of the subject here. A patient may occasionally develop a specific allergic sensitiveness to any external agent and certainly to any of these mentioned above. Specific sensitiveness to plant extracts, such as the patients has been long recognized, in which the slightest contact with the irritant produces an acute inflammatory inflammatory reaction. Similar sensitiveness to substances, particularly to certain light, is commonly seen, and an increasing range of household and industrial irritants is being recognized as producing varying stages of scurvy. It tends to be characteristic of this group of reactions that the reaction is associated with considerable edema, and the point is of some value in diagnosis.

A recognized investigation which will intensify studies such specific sensitiveness is the 'patch test.' A small quantity of the suspected irritant is applied to a limited area of skin, together with controls under a bandage for a period of twenty-four hours, a positive reaction showing an acute inflammatory response at the site of application. This test should be conducted where there is reasonable clinical indication of possible specific sensitiveness, and should invariably be carried out in cases of industrial exposures, domestic and in undiagnosed cases, such as the one and two days exposure. Since the reaction tends to be an acute one especially if the patient at the time is suffering from the disease, the test should be made with a small quantity of the suspected irritant over a very limited area. The importance of the investigation obviously lies in the fact that avoidance of contact with the pleasurable irritant may keep the patient free from exposure.

At the same time the whole problem of scurvy must be kept in mind even in these specific cases, for the nature and degree of the underlying

personal hyperexcitability or predisposing conditions may become prominent at the reaction even when the particular irritant is removed. It indicates, of course, that the patient is constitutionally an extremely subject, even though he may not previously have suffered from such a condition. It is necessary after such a specific reaction to think in terms not only of every subsequent reaction but also in each original 'accident'. This is particularly true in industrial processes, but the assumption is, in any organic subject, and would not even if the simple conception of systems was maintained against the idea of 'derivation' as a specific cause.

A specific sensitization may sometimes be developed towards organisms or organisms some organismized upon an original system, but will commonly yield to simple antiseptic treatment of the infection. Where, however, sensitization is related to organisms normally living on the skin as in some infectious affections, treatment is, absolutely, extraordinarily difficult.

More important than this is the development of auto-sensitization, where the patient is sensitized to his own system which, as it spreads or is moved over the surface of the skin, creates a correspondingly extensive reaction. It is probable that in some cases reduplications of the altered system, carried through the blood stream to distant parts, may produce reactions leading to serious, suppurating and sometimes observed as cases of generalized eczema of the legs. This particular conception of this aspect of eczema, which seems to be confirmed by experience and experiment, gives some justification for regarding eczema in particular reactions as a disease in itself rather than a symptomatic reaction. It will be apparent that here the reaction can reproduce itself quite independently of the original provoking and predisposing causes, but it is fortunate that such cases commonly appear to respond well to simple measures of desensitization, contrary to what might be expected.

#### TREATMENT

The factor of habit is related to skin reactions in itching and to scratching, constitutes one of the greatest difficulties in treatment, for, whether by the agency of simple irritation or by auto-sensitization it will naturally become persistent and chronic. The criterion in treatment here is a well posing principle in the treatment of all eczema—in the relief of itching, and if this cannot be obtained by local treatment, it must be obtained by internal medication, or, if need be, by special measures, such as x-rays or shock therapy.

It cannot be too strongly expressed that there is no single routine local treatment applicable to any and every case of eczema. Indeed, it may be said that every case is an individual problem and must be regarded from the three points of view of personality, predisposing and existing causes combined above to effect successful treatment. It is true that in many of



the cause due to specific causation in the first two, but it may not be of immediate importance, but even here the interpretation and significance of the outcome must not be too readily dismissed.

The understanding of the patient and the endeavor to assist him to an appreciation of the significance of his disability is fundamental in nature, but in the course of personal and constitutional medical practice, and cannot be further elaborated here.

Among the immediate problems, the determination of the nature and predisposing factors is obviously of paramount importance, especially if there is any specific causation present.

In local applications, wet dressings of weak hydrocolloid of soda (now dissolved in the past of warm water) are most valuable in the allergic reactions, where absorption and spreading may be used internally with advantage. For mild, simple exanthematous eruptions, weak lead lotion followed by a salubrious balsam is most soothing. In the majority of cases of eczema, and in all severe infections, tar is certainly the most valuable application. It may be presented as a watery lotion, with lead, or calcareous bases or balsam (by paste made dr. 4, or glycerine pump gr. xv to the ounce). For chronic and ichthyoid cases similar quantities of tar in Lassar's paste, or glycerine pump gr. xv may suit, or the paraffin ointment to the same—to either of which may be added hydrocortisone gr. x, if there is infection present—is a strong but efficient form of treatment.

To clear the cutaneous lesions from the use of a paste it should be converted up to the skin by freely powdering with any simple dusting powder, and the application should not be renewed, but should usually be replaced from time to time as necessary.

In most cases of eczema it is better to allow washing—not because of the evulsion of water—but because the patient will appreciate the action in drying and rubbing the skin after washing.

Internal treatment (not the greatest importance in the relief of itching and simple relief measures in small doses, to avoid depression, are indicated). Relief of the itching will require acid and alkali, which is so essential to recovery. Japsone, internal gr. 1-4 or 5 is poisonous (bromide gr. 1-4) (with up to 100 mg. of acid to the tea and powder) are the most valuable. Valerian also helps some cases, in doses of 100 mg. with and hydrocortisone 50 to 100 mg. daily.

Ultraviolet therapy is one of the most useful measures in the treatment of chronic eczema, especially in localized areas, but it must be used judiciously in conjunction with other treatment, and by one versed in optical radiography.

Measures of non-specific shock therapy are of value in chronic cases or in other constitutional diseases, and may take the form of auto-haemotherapy, injections of whole serum therapy or pyrexial therapy, with substances T.S.D. or other such measures.

(Continued)

In summary, I would see this vitamin as a potent factor in the control of scurvy symptoms. It is one of the vitamins on which the organism living with vitamin deficiency must depend. Specific deficiency does in experimental systems. It is an important aspect of human cases of scurvy, but in all cases the process of maintenance and hence is of greatest interest, is of importance etiologically and must often determine treatment and control programs.

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#### NOTES FOR SHIP SURGEONS

BY VERNER LUTHERINE GILBERT, D. M. B. HENDERSON, WILSON HOPKINS,  
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In these days, when Naval Medical Officers are taking part in the Merchant Ship as increasing numbers both as a means of maintaining their position and as a means of finding a congenial occupation in which they are well liked.

The purpose of the following random remarks is to provide a few tips to those who are contemplating taking such part, and if apology be needed for stating some of the apparently trivial common remarks, I would add that this Journal is not entirely devoid of such, by many unappreciated with the sea.

First it is necessary to choose a post on a shipping company, and then as by an owner or captain to appear in first sight. The larger companies have a more or less permanent service of surgeons, and their appointments are in the hands of a Medical Superintendent. It is well therefore to address a preliminary letter to him, asking for particulars and the necessary forms of application. If the terms applied apply to a personal interview. If it is not stated in the prospectus, it is as well to inquire whether the vessels of a particular company carry a nursing sister, rather a not likely situation. Many vessels carry such a staff and the Surgeon's burden is thereby much lightened and he is freed from the necessity of dispensing and doing minor surgery, &c.

Inquire also about loss. Some companies allow their surgeons to sail for free, (his rules are usually freely from passengers, but it is of course commonly accepted that members of the crew are treated free, such service being covered by the fixed salary paid by the company.

Do not place your name with one company only if you require early employment. Nearly every shipping company has a waiting list to which your name is added on acceptance. Put your name down with several companies, and take the first vacancy which comes along if you cannot afford to wait. Thanks to other firms can be made later.

It is possible to pump over the heads of many on the working list by means of the simple pretence of keeping the company in possession of your whereabouts, and whenever possible, of having a telephone number at

which is to be made in hand. Very often green uniforms at short notice, sometimes as little as twenty-four hours being given, when a sudden vacancy occurs.

Do not suppose of your uniform in entering from the Naval Service, you will require monkey jacket, breeches and undress mess kit as most of the big companies, as that is required in alterations of the gold lace to conform with the company's standard. In some companies the Messieurs have standard uniforms as were a cluster having three gold stripes with a gold diamond interspaces with the usual medals however. The larger companies have their own designs, most of which look far better and very from a shoulder badge, resembling the distinguishing mark of the chief officer of a village fire brigade to the old distances lace of a Fleet Surgeon.

If you have no temporary post during the waiting period, time is well spent in taking the post-graduate course for Ship Surgeons. This course is run by the General Hospital Society in conjunction with the London School of Hygiene and Tropical Medicine. It is made up of three parts, each lasting three weeks covering general surgery and medicine, hygiene and tropical diseases.

A refresher course in infectious diseases and in radiology is also useful and well valued for in London.

With regard to instruments little need be said, as the necessary width and numbers that supplied by one group of shops is ample.

Even in these enlightened days, however, comparatively few companies provide a microscope or stetho. Considering how easily a little help is available for want of the necessary to acquire Surgeons, it is difficult to understand the reluctance of the average company to provide them.

A word of warning is necessary, and that is whenever possible look over your notes before sailing, and see that deficiencies are made up. Your professor may not have been careful in writing expanded notes.

Those who contemplate going to sea in the Merchant Navy should read work, from and carefully digest the contents of the *Handbook for Ship Surgeons*, by Surgeon-Commander A. H. T. Fisher D.F.C. R.N.V.R. It contains a wealth of information and should be kept constantly at hand.

#### QUARANTINE.

Foreign countries vary considerably in their requirements with regard to quarantine and medical inspection of vessels. In England and Wales thanks to the Port Sanitary Regulations of 1948, something approaching uniformity of procedure is now practised. Rules extend as far as England or Wales for Declaration of Health but as to completed and signed by the Master, and counter-signed by the Surgeon (if one is carried) of the incoming vessel. This form has to be handed to the Port Medical Officer on arrival at in the case of vessels from ports other than those in the scheduled system on page 4 of the Declaration of Health given in the Quarantine Office of H.M. Customs who grants a Portpass.

(Only)

## PORT OF LONDON SANITARY AUTHORITY.

SHIP SANITARY REGULATIONS 1885 (ARTICLE 15)

## DECLARATION OF HEALTH

(To be completed by the Master of a foreign-going ship arriving in England or Wales from a foreign Port)

Before answering the following questions read the Instructions on page 5

Name of Vessel \_\_\_\_\_ From \_\_\_\_\_ To \_\_\_\_\_  
 Nationality \_\_\_\_\_ Not Registered Tonnage \_\_\_\_\_

## HEALTH QUESTIONS

1. Has there been on board during the voyage\* any case or suspected case of plague, cholera, typhoid fever, typhus fever or smallpox (give particulars in the following) \_\_\_\_\_
2. Has plague occurred or been suspected amongst the crew or other persons on board during the voyage? \* \_\_\_\_\_
3. Has any person or persons or dead or sickened the crew or other persons on board during the voyage been found to have been employed for this voyage? \_\_\_\_\_
4. Has any person died on board during the voyage\* otherwise than as the result of accident (give particulars in the following) \_\_\_\_\_
5. Is there a death or has there been during the voyage\* any case of disease which you suspect to be of an infectious nature? (Give particulars in the following) \_\_\_\_\_

Answer  
Yes or No

Note.—In the answer to a question, the Master should report the following symptoms as grounds for suspecting the existence of infectious diseases:—  
 Fever accompanied by prostration or vomiting;  
 the second stage in malarial and plethoric  
 conditions; or any extraordinary case or cases of cold  
 or influenza; fever, acute diarrhoea or cholera;  
 with symptoms of typhus; (give particulars  
 in the form)

I hereby declare that any other condition on board which may lead to suspicion of the existence of infectious disease \_\_\_\_\_

I hereby declare that the particulars and answers to the questions given in this Declaration of Health (including the Schedule) are true and correct to the best of my knowledge and belief

Date \_\_\_\_\_ Signed \_\_\_\_\_

(Master)

Counter-signed \_\_\_\_\_

(Ship's Surgeon)

\* If more than one vessel has been engaged during the date on which the voyage began it will suffice to give particulars for the last one only.



PART II

Form No. 100 (2) Service Pass-Book, Cruise and Cruise

From Port of Loading \_\_\_\_\_ Date of Departure \_\_\_\_\_  
 Name of Ship \_\_\_\_\_  
 Command \_\_\_\_\_

Home-made \_\_\_\_\_  
 \_\_\_\_\_

Name Port of Voyage and completed \_\_\_\_\_  
 Name of Officer or Agent \_\_\_\_\_  
 Name of Cargo \_\_\_\_\_

Number of Persons on board \_\_\_\_\_

(a) Crew	<u>British</u>	<u>Alien</u>
(a) White		
(b) Colored		
Totals		

(c) Passengers	<u>British</u>	<u>Alien</u>
(a) 1st Saloon		
(b) 2nd Saloon		
(c) 3rd Saloon		
(d) Steerage		
Totals		

(d) Other Persons on board \_\_\_\_\_

Signed \_\_\_\_\_  
 (Doctor)

TRANSITION

The *Magnolia*, a foreign going ship approaching a Port of London or other Port, a Foreign Port must ascertain the state of L. 11. 1) all parties on board and 2) all ships in the Port of London or other Port, as the case may be.

If the answer to any of the questions on page 1 is "YES," and if the ship has sailed from, or during the voyage visited at, any of the following Ports —

Ports in ASIA including JAPAN, the EAST INDIES and CEYLON, AFRICA, including MADAGASCAR and CANARY ISLANDS and CAPE VERDE ISLANDS, TURKEY, GREECE, BLACK SEA, ADRIATIC, SOUTH AMERICA, CENTRAL AMERICA, GULF OF MEXICO, WEST INDIES.

then passage will not be granted by the *Magnolia's* Customs until the vessel has been visited by the Port Medical Officer.

The Master must therefore —

- (1) Send a wireless message to "HYDRA," GRAYHOUND, stating the name of his vessel and the time it is expected to arrive at Grayhound. This message must be sent not more than 12 hours and not less than 4 hours before the arrival of the ship. (If wireless is not worked the Port Sanitary Authority must be notified of the arrival of the ship as soon as possible.)
- (2) By day, when within the Port of London, hoist the flag signal L. 1. 11, meaning Port Medical Officer required.
- By night when approaching Grayhound, flash letter "Q" repeatedly from the search lamp.
- (3) Be prepared to answer the queries for inspection by the Port Medical Officer.
- (4) In the case of vessels bound for the Redway, the wireless message must be sent to "HYDRA," GRAYHOUND, but must be as follows: —

" (Name of vessel) (Time of arrival) Grayhound

The maximum penalty for breach of the Port Sanitary Regulations 1914, is £100.

GEORGE F. WHIPPLE,

Medical Officer of Health

Port of London

Name of ship to be visited

Time to be kept clear

It is recalled that the Master and Surgeon refuse their responsibility in filling up the Declaration of Health, and both should be fully cognizant of the state of health of every person on board at the time of arrival. It should be a simple matter to interview the heads of departments such as the Chief Engineer, Purser, &c., and ascertain whether any of them were sick, and in the case of Assistant Surgeons the doctor should have the crew examined and report therefrom to be served as part. The Declaration of Health is self-explanatory and only requires careful reading, but the returns handed in continuously or incompletely filled up is annoying.

The question concerning rats is important. None, if present, are usually seen by anybody on board, and it is both foolish and wrong to assume "No," simply—no rat-bait does happen—because it is generally felt that rats are naturally present on a ship. When an epidemic amongst rats is present dead or dying rats are cast over and someone usually hauls them over board. Such cases should be reported.

On the arrival of the vessel at the Quarantine ground it is the Surgeon's duty to be at the gangway to receive the Port Medical Officer when he boards the vessel. A great deal of time and trouble is saved if the Surgeon attends to the following points:—

(1) Note whether the appropriate flag signal is hoisted for the light signal at night. If it is not, a useful word to the bridge will usually be well received.

(2) Arrange for the crew to be ready for marching when such procedure is required. This is a matter for arrangement with the Chief Officer, Chief Engineer, and Purser or Chief Steward, who will then partition the members of their own departments. Nothing is more annoying than a twenty minute delay while the crew is being rounded up. It is worth mentioning here that after experience of naval discipline and rigidity of orders one gets a severe shock at the amount of time taken to muster the average merchant crew. The time taken gives scope for reflection and comparison as to how long it would take if the order happened to be "Aboard ship. Muster crew in particular take longer to muster than Europeans.

(3) Have the following papers ready to hand:—

(a) Declaration of Health.

(b) Declaration or Declaration Exemption Certificate.

(c) Crew and Passenger lists with the same submitted thereto.

Crew lists are not required unless they are being paid off, i.e. they need only be handed over at the terminal port, unless specifically called for. Passenger lists should be complete, and include those who have been booked at intermediate ports. Addresses, viz. Paris or Lyons, etc., should be omitted when a definite address can be furnished. The need for these lists is that in the event of the outbreak of infectious disease—even after the vessel has been in port and disinfection and paying off has been



completed—the entire personnel can be rounded up by the local Public Health Authorities and kept under surveillance for the quarantine period.

(d) *Bills of Health*

I mention these last because of their importance. Nowadays terms travel fast and, thanks to the admirable work of the Health Bureau at Geneva, a weekly bulletin is circulated to all Port Medical Officers, giving the diseases prevailing on all ports in the world, together with the case incidence and number of deaths from each disease. The Bills of Health brought by the ship are therefore generally a few weeks out of date in the case of a long voyage, and with foreign Bills of Health these omissions and omissions are plentiful only! It is important to remember that in certain ports signed Bills of Health are issued and if the ship has called at these ports and only twenty-four Bills of Health can be produced the chances are that delay in clearing the ship will result.

RELATIONSHIP OF SHIP'S SURGEON TO PORT HEALTH OFFICERS

The Port Health Officer used to be (and possibly still is) regarded as a medical clerk who was known to shipping, by virtue of his power to delay the docking of a vessel and disembarkation of personnel and cargo—a veritable "Navy Doctor" of the first water, who is supposed to treat the Ship's Surgeon further than he can throw him!

The Ship's Surgeon, on the other hand, used to be rather wrongly regarded as a medical clerk who found a sorry life at sea more congenial than the dull round of life ashore in a practice.

Both attitudes of regarding one another are quite wrong. To day, the Merchant Navy offers an attractive life, and to large passenger vessels, at any rate, a good general practice, embracing all branches of professional interest. The Ship's Surgeon is the Medical Officer of Health as well as the General Practitioner of a land-based community. It is small wonder therefore that to day we meet with men of high academic attainment and vast experience, serving as Surgeons on Merchant vessels. On the other hand, it is still the practice of some newly qualified young men to take a voyage as Ship's Surgeon by way of a rest cure after the hard work for their friends, and before settling down to practice ashore, or while waiting for jobs "on the home." Their inexperience in their knowledge and determination being superstitious, makes it probable to some all necessary means must be provided for on ports. Lastly, the Ship's Surgeon is the servant of the Company and has the Company's interests represented on his mind. The docking of the vessel is of importance, in the Master will never let him know to him.

Now what of the Port Medical Officer? He is a portman, but his aim is to facilitate shipping and not hinder it. He has his duty to perform and being the servant of the vast general public he cannot allow the requirements of individual companies to stand in the way of the

effluent investigation of infectious diseases. The disastrous results of a second case of smallpox, for instance, which once it has gained admittance into the country are more menacing than they would at first sight appear, rest on the Port Medical Officer far more than on the Ship's Surgeon.

The Port Medical Officer is only too willing to relieve the Ship's Surgeon of all the responsibility he can, and is ready to suppose of intruders and non-intruders cases alike. He carries the information as to which will have reserved cases, accidents and the like may be treated and can readily make arrangements for looking after sick and wounded. He likes to be treated with confidence, and it is far better for the Ship's Surgeon to be perfectly frank and submit a full list of every case he has had during the voyage, and let the Port Medical Officer select those he wants, than to attempt to hide out those he doubts the Port Medical Officer would be interested in. As an example of the danger on the part of the Port Medical Officer to take responsibility off the surgeon's shoulders one could not quote a better instance than the monitoring of diphtheria cases. This is not done because the Ship's Surgeon is hardly instructed but because the Port Medical Officer usually has had more experience of the appearance of such a disease, and even the news has been passed by the Port Medical Officer the responsibility is lifted from the surgeon. Furthermore Anstons will often select sickness as a strange disease which they covered from their own Ship's Surgeon.

#### Notes. Tenth.

We all of us know that feeling of relief when we shut two ourselves away from the cause of suffering and that in hospitals, workhouses or what not. The Merchant Service is suited to reference checks and reports. It must be borne in mind that there is another side to every question, and put in paper work as plenty as necessary to the Service, so are also notes sent to the Port Medical Officer when investigating cases of disease. The Port Medical Officer has to write reports on the surgeon's notes, and it helps materially if the Ship's Surgeon has a head cleared and a temperature there to offer rather than a hot one has run a temperature of 99° to 101° F. for the last four days, and had a few spots on his chest and a heart of darkness, which only too often is the best way is offered as a history. Far be it from me to attempt to preach an interesting but one consistently finds it is a hot set to work since the death of the medical school is shaken from the feet. An example of this appears better what I mean. A vessel arrived not so very long ago, having landed a case of suspected smallpox at an intermediate port. She reached her terminal port ten days later, and therefore still within the quarantine period. The Surgeon was certain the case was diphtheria and not smallpox, but the foreign authority had landed him as a suspect smallpox. Asked to produce his notes and give his reasons for the diphtheria post theory the best he could do, either verbally or in writing was 'the rash was

typical. In description of distribution, regularity and shape of the spots, position or absence of perforations, etc. These aspects had the Post Medical Officer had to accept the smallpox diagnosis and treat the ship as such.<sup>1</sup> This means a delay of six hours, the loss of a late and consequent provision of an extra meal to 100 passengers—no small item to the Coopers. Had another proof, as well as our notes and a rough sketch of the distribution of the rash, been forthcoming it is possible that no delay would have ensued and the Surgeon's diagnosis would have been accepted. Five minutes' inspection came taking can save five hours to a ship later for the Post Medical Officer, when any doubt exists about not on the assumption that the more serious of the two diseases is present.

#### LANDING OF PASSENGERS

When a case requires landing, an advance medical message to the Post Medical Officer is of great value. In all ports in England and Wales the telegraphic address is "Passenger," followed by the name of the port concerned, and any message so sent receives prompt attention. It is up to the Surgeon to consult the executive officers as to what the usual means and facilities are for disembarking sick and injured, and in this connection it is worth noting that disinfection is the keynote in the emergency rather than the rule. In most ports an ambulance launch takes off cases down from the ship before docking.

Three methods present themselves:—

(a) An accommodation ladder. Useful for making men but awkward for a stretcher.

(b) Stair door, if one is present. Is simple, provided it is close to the waterline.

(c) Turret and drape. The last method when the case is serious and needs careful handling.

Time often happens that owing to lack of thought the accommodation ladder is not raised, the stair door may be hurriedly opened, and there is no means at all suitable. For some minutes results the rigging of an accommodation ladder is much delayed and takes an unnecessary time to perform as it is not an instance to do so in the turret. The unfortunate Post Medical Officer is then faced with the problem of how to get the patient out of the ship and how to avoid delay. In London we have partially solved the problem by either using a boat, derrick and falls, or by using a Red Robertson stretcher when all other means fail. A second falling which repeatedly presents itself is also due to lack of thought. In collection cases it is obvious that the hoisting and efforts of a patient will require to be backed by disinfection. Usually two sets of bedding will be required, viz., that used by the patient in the cabin and that used on the ship's hospital if he was recovered there later. Bedding comprises blankets, sheets, pillow, pillow case, towels and underwear. The last named is most important and rarely thought of unless specifically asked for. Every

and in taking of these things and an inventory one always be prepared and signed out by a responsible officer.

#### DISINFECTION

The Surgeon should personally supervise the disinfection of infected patients on board when cases are landed during a voyage. In terminal ports, the local Port Sanitary Authority generally does the work for him, the cases being landed on removal of the case and the actual disinfection and cleaning being done later when the vessel has landed. With regard to disinfection on the voyage it is worth while bearing in mind that a ton of water from a hose is far better than a pint of liquid disinfectant from a spray. Furthermore a 'pint out' of a cabin is very effective and not a costly proceeding. If a steam disinfecter is not carried on board bedding can be wet made, treated in disinfectant solution, and landed later for proper disinfection.

In conclusion the Ship's Surgeon usually makes an equivalent to the second officer and in the larger companies he provides at a table at meal times. His relationship with other officers is largely what he likes to make it and differs little if at all from that found in the warships or U. S. ships. The average Merchant Service officer is well up in first aid, and is accustomed to obligatory emergency work when called for by his captain's orders. The work is useful for the Surgeon will never lack assistance when he needs it, and he will not find any unnecessarily complex management by higher officers whose medical position are concerned. The ships surgeon should, having made up his mind on a course of action, be resolute on its execution, handling the situation with all the tact he can muster.

#### A VISIT TO CHUNGKING

By HANSON LEITCHMAN, J. D. CLUTE, R.N.

Towards the close of a three and a half months' stop in Chungking I obtained leave to visit Chungking with the object of making examination of the situation, particularly from the medical point of view, at the West China Union University.

On the morning of Monday, March 5, I crossed the river to Chungking City and joined Mr. C. L. B. who was accompanying me to Chungking on a business trip. The Chungking air-field is a large sandbank opposite the U. C. U. S. T. Installation and extends far and during the high water season. When dry it appears to be a very satisfactory landing ground, with the one exception that low telegraph wires cross the river at that point. There is no flying ground suitable for the high-level seamen except the military field, thirteen miles down river.

We arrived at the ground at 12-45 to wait the arrival of the plane from Chungking. Just before one o'clock the Handley plane arrived and landed

on the water slowly, and a few minutes later the Chiang's plane flew over the city and made a perfect landing just in front of us. By then two Spanish Chiang officers had arrived on the scene and our luggage was searched and weighed. It is interesting that no customs clearance for such passengers' baggage was forbidden, but there appeared to be no question of taxation. The goods were transferred, the plane refueled, and the passengers embarked.

The Chiang's plane is a four motor totally enclosed monoplane with accommodations for two pilots. The pilot on this occasion was an American, but the Chinese co-pilot was not present, in addition there was the full complement of four passengers with luggage and several bags of mail.

Shortly at 1:30, on a drizzle of rain and mist, we left Chungking and proceeded to follow the course of the Little Three (Kialing Hsi, along mountain slopes and sometimes between the peaks of the surrounding mountains. Considering the remoteness of the country the trip was remarkably smooth, and as we approached Fanning the weather steadily improved. At Fanning we left the river and flew due west towards Chungking. The sea was gradually breaking through the clouds and after about an hour and three quarters flying the mountains flanked us rapidly, and we crossed the head of the Chiang's Plane. We approached the city from the south, flying first over the University Campus and then over the walled city itself to land in a large field about five miles to the north of the city gate.

Here our luggage was again searched and some ten minutes later the Company's car arrived and we started off towards the city. The road from the air field to the city was on an appalling condition being several inches deep in mud. The car splashed from side to side, and only slight driving started a disaster. At the North gate the car was returned by the officers in charge and then allowed to proceed. Inside the city conditions improved, the roads were quite well kept and wide enough for cars and peddling to pass with ease. We drove to the General Post Office and then to the U. S. A. C. office where the passengers were disembarked.

C. L. B., who was staying with the Spanish Consul, was met here and departed for the Consulate. Fortunately for me the pilot hired a stout American army man from the plane where I was preparing to stay and so I got a lift to my destination in the Chiang's car.

The city appeared very attractive with Chungking in regard to clean, modern roads and buildings was surprisingly modern. At the North gate the car was again returned, and I found that occurred every time I was driven in or out of the city even when accompanied by well-known residents. This was possibly due to the presence of General Wang in the city as a compulsory "guest" of Marshal Lee Hsing, or possibly it was intended because a few days previously a suggested arrangement of other, hostile and transaction had been made at the North gate.

About half a mile from the city, after crossing the north branch of the Yangtze river divides there the city to pass on either side of the main and

regions & then we passed through the gates of the University Campus and on a few minutes arrived at the residence of the people with whom I was preparing to spend the next few days.

The West China Union University occupies an extensive area of land to the north of the city. Its colleges and residences are all separated from one another and the extensive green lands and shady trees give the appearance of an English park, as there was another full day before the opening of the summer term, scarcely any Chinese would be seen to disrupt the idylls. During the few days, however, that I remained there I found that quite a number of Chinese from the city already going rampant, did wander to the grounds until I was told that it was impossible to keep them out, as the local authorities would not allow a wall to be built round the University property.

On Monday evening my host took me round the farm lands and gave me some idea of his work as experimental breeding and stock improvement. I saw some excellent results of cattle and chicken breeding, and all activities were going on, and fruit growing experiments. The animal experiments were limited by the material at his disposal—chicken shells were not an infrequent occurrence, but the experimental operations seemed to appeal to the Chinese farmers and I saw extensive results of their interest.

On Tuesday morning I was taken to see the Medical and Dental colleges—the latter being the only recognized dental school in China—and found everything being prepared for the term opening on the following day. I found that gonorrhea was being led on the principle of hygiene and public health, and that considerable propaganda in that direction was being organized. The medical and dental teaching staff included many very able men, some with world-wide reputations, and the students were fortunate in obtaining far more individual attention than is found in most foreign universities, where the ratio of students to teachers is so much higher. A factor of even greater interest, in my mind, was the enormous possibility of research as a result of the possession of very considerable stores with almost limitless material.

In the afternoon I visited some of the hospitals, run by the University but situated within the city walls. As with all hospitals in China, one great difficulty is to complete any form of treatment and obtain a true estimate of its value, as most Chinese patients insist on leaving hospital the moment the particular symptom complained of is relieved. In addition to those in the city, the University authorities are hoping soon to build a hospital within the University grounds.

On Wednesday I was shown the University Library and the Museum. The latter was of great interest and contained an extremely well arranged collection of specimens of all kinds obtained from Western China. Some of the pottery collections were of great age and generally primitive. Most of the specimens had been collected in broadsword and the adjacent parts

of Tibet by members of the University staff and arranged and classified by Dr. D. C. Graham.

Afterwards I visited the library, department of the Medical College and saw the students at work. I was then shown by Dr. Morris, the Professor of Anatomy, some of his work on anthropology with reference to the Chinese and aboriginal races in Szechuan and the adjacent region.

In the evening I was visited by most routine members of the Hospital staff living in the city itself, and as the city gates were closed at 6 p.m., I was very kindly put up for the night. I had some difficulty in reaching my destination by motor as various of the streets in the neighbourhood of the Hospital had been suddenly closed and were strictly guarded by soldiers.

Most of Thursday was spent in the city, seeing what I could in the way of my demand, and in the afternoon I accompanied many members of the University staff to a big Chinese feast.

Friday morning was wet and windy for the first time since my arrival, and at first there seemed some doubt whether the plane would be able to make the journey to Chungking. However, about 11 a.m. the mist began to show signs of clearing, and on the receipt of favourable weather reports by wireless, the pilot decided that conditions were satisfactory. The journey to the air-field presented some difficulty near the South gate of the city was passed, and it was necessary to get down on the wheels of the car to get through the road. However, we arrived at last, and true to the reports, the weather steadily improved and we made an untroubled journey back to Chungking.

#### THE CENTRAL HOSPITAL, NANKING

By Lieutenant Lieutenant Colonel F. C. FRANKLIN, R.N.

This hospital is situated off the Cheng Shiang Road, about twenty minutes ride on a taxi from the Bund, in about fifteen minutes from K.H.H. Compound Compound and was opened in July, 1933, after being only two years under construction. It is situated on a large compound overlooking the river (the name of the compound does not follow the pattern) and from any point in the building an excellent view of the surrounding country can be obtained.

The Medical Director of the hospital, Dr. J. Peng, Lee, very kindly showed me over the place. The hospital, which is three stories high, is built of reinforced concrete with central towers from which two long wings branch to the right and left. From the central hall there is a lift (the only one in Nanking) which can accommodate several people as well as a wheeled stretcher. The ground floor is divided off into out-patient departments. Here patients attend during the forenoon and afternoon for treatment, e.g. women's complaints, chest examinations, eyes, ears, nose

and throat work, etc., in many of the London hospitals. There is a large dispensary department in addition to various clinics for VD, TB, etc.

The first floor besides containing wards for the poor patients (who pay only 50 cents per day), also contains the examination rooms for work extended work in our clinic, and throat. This department has an cubicles or partitions for the examination of patients. There are the usual arrangements for the type of work, e.g., work master, encourage, etc., in each compartment. The 1st department, which was thronged with patients (mostly suffering from trachoma), is also well fitted.

The dental clinic has three good-sized chairs and all the necessary accessories.

The wards for the poorer type of patient are large and airy, with plenty



of light and ventilation. I have never seen so many windows in a room—the wall seemed to be all windows—and I should think comfort in combating the heat of the summer; I did not notice mosquito frames for netting, but perhaps they will be put in when the summer comes. The walls, corners and base of glazed cement, are painted all the beds well apart, there is no overcrowding the bedding clean, with the bedsheets painted white and there was no evidence of soiling on the floor. The whole impression is one of cleanliness. The artificial lighting is by electricity there is telephone communication between the wards, and an ambulance is available. The hospital contains 550 beds and when I reported it about 350 were occupied. Considering that February is recognized as one of the hottest months of the year for patients in China, a dozen beds with the hospital is patronized during the dark period. During the summer, however, there is much sickness and more sufficient beds available to cope with the waiting list.



The second class patients pay between 15 and 20 per day, for their stay in hospital, the first class patients 25 per day. This includes everything, e.g., food, medical and nursing attention and treatment. I believe a ray and laboratory examination is included in that fee but I am not absolutely certain. The hospital has about 10 doctors, and doctors doing post-graduate work on the staff. The only foreign doctor is Dr. J. S. Pomeroy, an American. There is also a nursing staff both male and female and their training, as well as that of undergrads, is carried out in the hospital. The rooms for private patients are furnished with a bed arm-chair, bath room for one bath room between two rooms, and a dressing-table, and are heated by means of a steam radiator. The hospital is steam heated throughout. The total cost of the hospital works out about \$2,000 per



day, and since it is a State-owned hospital the patients come from the General Government, Nanking.

There is a very well fitted up x-ray department, with all the very latest and newest type of gear. There are several operating theatres with washing-up rooms attached, as well as anaesthetic rooms. The operating theatres have blue tiled walls and floors, good tables, and the usual anaesthetic Sauer pumps. There appears to be plenty of instruments. The hospital has a very good midwifery block or floor, and there were Japanese ladies in their little white nursing (and knowing) frocks when I visited them. The wards, private rooms, and corridors give the impression of being spotlessly clean, well lighted and maintained. There is nothing cramped or inconvenient in their design.

There was a great air of health and "cleanliness" about the whole place and the workers of the various departments. I requested the hospital

during a week day, and I was taken into various places, as I could go into a ward without hindrance. What I mean to convey is that there was no special need or portion of the hospital closed for my inspection. I was allowed to see the ordinary routine and daily work of a big institution, and it impressed me very much.

At present the hospital has no Medical School, but it is hoped in the near future to have classes and a teaching staff for the students.

Most of the electrical fittings and some of the instruments came from Germany, but American also supplied some, as did Yamao. As far as I could find out there was no instrument or object purchased in England.

The impression left on me after my inspection of the hospital was that, if the work is of a high standard as the scientific institution, the hospital should have a great and very successful future. There were present all the up-to-date and latest appliances to aid the physician and surgeon in his task. To what successful purpose they will be put remains to be seen. Though there are plenty of doctors on the staff, and the head of them all is a very distinguished medical personality, who received his training at the Medical School attached to Harvard University, the hospital is still an untried facility. Its reputation has yet to be made.

During the first Chinese war hospital I have suggested. The majority of the hospitals in the Yangtze estuary are under American or Dutch supervision, most of which I have visited during the past two years, and the surgery as a general rule is performed by the foreign or foreign patients. In this hospital the foreigner would be under the care and treatment of Chinese.

#### THE PUBLIC HEALTH DEPARTMENT

This is a building rather like the hospital in structure, and situated behind it. It may be called "The Clinic of Dr. J. Heng Lin," Vice Minister of Public Health in the Central Government. It is a fairly long building and two stories high. This is quite a nice place, and is one of the most complete and up-to-date laboratories I have ever seen anywhere, and I have inspected most of the hospitals in the big North and South American sea-port towns.

There are various departments devoted to different kinds of research work pertaining to all matters of public health. Various are made for cholera, typhoid, smallpox, &c.—The Bacterial Research room is very good, with many types of *Ascaris* in bottles, and test tubes, and slides illustrating blood films, and the cycle of the disease.

Schistosomiasis has a special room all its staff, and the eggs were demonstrated to me under an overhead microscope. There were several microscopes (made in Germany) in the various rooms.

The preparing notes for health charts and sanitary slides, as used in schools, were most interesting, and models illustrating the various fever cycles, e.g. scarlet fever, measles, smallpox, were being manufactured by

youngsters, while a child I remember, I think must I shrink to watch one of them with a plastic cast of a forearm (he told me I a wire which he heated over a lighted Bunsen burner in the room, applying the cast but were in another kind of wire and dropping beads on to the model, and producing the casts of casts in the vascular stage. The 'Epison' as was modelling covered the primary cast of 15 a month for her work. The original models were purchased in Vienna and excellent reproductions, at relatively small cost, were made from them. Gradually, however as tropical diseases are being sent in to the department from the various districts and maps, with flags stuck on them, hang on the walls of each room in those where any particular type of disease is the more prevalent in certain parts of China.

I was very much taken by the 'Stat.' medicine, that was in the manner of a ready reckoner, which had a head and a deal with figures representing months, weeks and days. An expert mother mentioned certain phenomena and, by a turn of the handle, the head spun round and told her when the happy event was to be expected. I gave it as an illustration to show how up to date is this hospital. That instrument, by a rapid turn of the handle, sets out many wearying pages from the student's textbooks on medicine.

There are many students and assistants working in the laboratory, and I enjoyed several lady students taking them.

All kinds of tests may be carried out in the hospital. Blood for Wassermann or Kahn tests can be estimated, and they make their own culture. In fact, it is completely self-contained. I also saw some students manufacturing cultures of micrococci. Milt and water can be analysed.

Every department was complete in every way, first class appliances—very well stocked museum. It had all the apparatus of chemistry that was complete recently purchased first-class paraphernalia. The department was opened in 1934.

Here again there are all the signs of a first class organisation. I carried the young doctors their good luck and good fortune in being able to start on their careers with such excellent means of learning the secrets of disease, and especially tropical diseases. There were in many specimens in use, and so many types of a particular disease to study, that diagnosis and the characteristic treatment for them should be easy. For one or two that the young foreign doctor who is leaving a medical school here were sorry. The Chinese thought of *Microspora* has a great future before him, he receives an excellent introduction to the relation of medical systems in the laboratory attached to the Central Hospital, Tsingtau.

THE CAPE STATION 1942-1949  
by GEORGE CONNORSON, V. C. RRC, RAN

The date was in 1941, the time late in the forenoon watch of a sitting hot Sunday, and the place an uninhabited island at some distance from Madagascar. It was low lying and flat, covered with tropical growth, and with many tall coconut palms on hill bearing. Paria were unaccountable close to the white beach, and twenty-foot sharks were swimming quietly round the ship. The boat which had sheltered some of the shipwrecked crew of a sailing ship many years before was still standing, and several geyers had been made ship by. There was a spring of fresh water, and the remnants of his men at hand for those sent away by the sea. Plenty of fish could be had by the sailing, and on the beach were many strange birds, reptiles, with dolerite, a detachment of Royal Marines.

The ship had been sent to reach the island in a possible landing base for a German ruler, but there was nothing to be found, and the Marines had a dull time except that several were nearly eaten by sharks diving to catch them in landing from the boat. It happened that the night of the sharks had reached a blood hot on board, with the result that a serious case was landed in the ward room, the intention of those concerned being to shoot the fish from the quarter deck. Comment on this procedure is unnecessary. The senior surgeon was talking to the surgeon at the top of the ward room ladder when the trunk of a rifle moved from the room. About one o'clock, about for the surgeon came from down below, and a tragedy was found on the ward room stairs.

A midshipman had entered the ward room just as the rifle exploded and had caught the bullet just below his knee. The bullet had penetrated the table diagonally, entered the leg at the inside of the knee, and emerged at the back of the table in the neighbourhood of the table's handle. There and round were all shattered, and in five minutes the patient was in the sick bay with preparations being made for immediate amputation. The patient is only mentioned to reach the difference of preserving organs in the sick bay of a very old light cruiser—a small space where the sick beds stand close and close—and to remember how on various occasions of war things seem to go wrong and one disaster succeeds another.

It was one of the hottest tropical days ever experienced by the writer. The amputation (below the knee) was performed by the Fleet Surgeon, the Surgeon assisted, and the gunnery officer watched attendance after rehearsal. The ship got under way immediately the operation was over. The patient had lost a good deal of blood and was greatly shocked. It was thought advisable to ask the Captain for help, speed in Durban, as various boats were entertained with regard to the patient's recovery.

In the following discussion on the case consequences, and at the same time another strange wound came from below. It was sustained by the surgeon, but the wound came on the surgeon's arm from down below on the

fracture of a screw. The port crank shaft had snapped in two. It is presumed that if the screw support had not stopped the engines instantly the fragments of the crank shaft would have broken through the ship's bottom. The ship limped into Durban on one leg after four days at sea. The patient was very ill and in great physical pain and distress of mind. He would see no one except the medical officers and the gunnery officer, for whom he had formed a great attachment and who was kindness itself in his unrelenting attention.

The following points are brought to mind, after many years, in recalling this unpleasant cruise:—

The narrow escape of the *Royal Harwich* from being eaten by sharks.

The great injury of a paper surgeon who had lost not only his leg but his backbone.

The difficulty of keeping the wound aseptic, and of ensuring the greatest possible physical and mental quietness to a gravely ill patient.

The mental instability (well marked, though temporary) of the individuals who had fired the shot.

The breaking of the crank shaft, which had been in the ship for over twenty years, and which had shown no signs of fault or weakness.

The patient was sent to the Addington Hospital at Durban as soon as the ship was made fast. The return to the base was undertaken with the escort of another elderly light cruiser, and we could stretch her cables no more until after the arrival of a new crank shaft from England many months afterwards.

The ship was lucky in the infectious epidemic of 1915. She had come down from an extended East Coast cruise, and had thirty cases of fever on board on arrival at Durban. There had as yet been no intimation of an epidemic at this Cape, and there were thought to be cases of malaria, of which they showed every clinical evidence. Specimens of blood, however, examined at Durban, showed no malarial parasites.

Almost immediately afterwards news was received of the outbreak of influenza at Simonstown, and of the violence of many cases in all ships of the squadron present in Simon's Bay. On arrival at this Cape intimation was given from the R.N. Hospital that supplies of vaccine were available from the Government Laboratory at Capetown, but that it was too late for prophylaxis in the other ships owing to the activity of the outbreak. The ship was accordingly sent to Saldanha Bay, a few hours steaming from Simonstown—in the hope of avoiding infection, a precaution which proved to be useless as the disease was raging in this district. Every officer and man was inoculated with the vaccine from Capetown.

It is pointed out, as a matter of interest, that this ship was the only one to make early use of the vaccine, and was the only one to escape deaths or complications of any kind. No cases occurred on board after the second thirty. It would appear that the vaccine was of diagnostic, prophylactic and curative value. The ship had just returned from the

quest so that it was possible to see the sailors with the delay and the least exposure to infection.

The disease was so bad in the Cape town, though that the local symptoms of cholera, were started in parts of the community, and were limited in duration. The Cape coloured community took refuge in flight, and it was not uncommon to find a whole family, in a good house in a well-to-do suburb rather dying or dead, having had no help for days. As far as I remember only one medical officer died in the 'typhoid'. The ships' medical officers sometimes used to hang out in the Naval Club on the dog watches and converse with me.

With regard to the rumour mentioned above it is believed that such good results were not obtained by preparations from other big centres in South Africa.

Malaria was not prevalent during this campaign. Flooding parties were not infrequent and occurred on many occasions in very isolated areas. With regard to the big parties it might have been expected to pick up men on a place like Beers, which in 1817 was an entirely different town to the Beers of to-day. The roads were deep with mud, and every second building seemed to be a bar open to the street, with mysterious customers in its back premises. Bats were fast on the outside of the streets for transport of passengers by means of mules packed by natives. The bars were open all night and were available for the purchase of every drink under the sun. Most of them have long since been closed, and the mules have been replaced by motor cars travelling on well-paved streets.

No matter what may be thought of present-day tendencies and developments and of the disappearance of that spirit of the national spirit, or adventures which added an attraction to certain places for certain temptations, nothing on the African Coast has appeared more striking in the water than the change in Beers in a few years. In 1917, the place might be described in the vernacular as 'rough'. In 1955, it appeared as elaborate city and seaside resort, with extensive plans for a fully equipped naval hospital, with good accommodations and all modern appointments, a place, in fact, available for the help wanted to exhibit her beauty in appropriate plumage and perfect style.

In Port Amelia, the big, almost landlocked harbour in Portuguese territory further south situated in a string of which no one seems to take much advantage (except the Germans who grow used), there was a big military hospital, with a staff of some twenty officers of the S.A.M.C. Two days being in company in the harbour, a happy match was arranged between the hospital and the squadron. There was at least one international player on each side and though the sun was hot, the ground hard, and the general conditions approaching the infernal, the game was compensated by both skill and nerve. Banging of drums and shouts of happy enthusiasm arose from the crowd headed by the the mob as the

each usually arrived. After the watch they all searched away in the crevices of their boats, happy in the belief that the sole which had shed most blood was undoubtedly the victor.

On one instance the ship was sent to Kamsapa in Jubaland, then a part of British territory. It appeared that the local Somalis were in an armable frame of mind and that several white men had recently been murdered. She fired a round or two at a conspicuous rock to impress the natives, and sent the Marine detachment for a short distance up country. The next morning several war-boats on the following day and were received by the officers of a small party of the King's African Rifles. These officers had been an eye for a long period, and were delighted at the cutter's visit. They entertained readily and loaded the naval officers with gifts in the shape of stores of all kinds some of which were of considerable interest and value.

The place was the abode of numerous large white buildings, glowing in the sun on a rising stretch of sand occupied mainly by cactus. In a strange thing that whenever two or three Englishmen are gathered together there is a remarkable calm. The one had a brilliant room and a bed, and a room opposite where a gentleman in the recent past had been exposed. The anchorage was an open one, and there was a very heavy swell along-side the pier. The officers having embarked themselves with landing-party agents the cutter was thrown after them into the boat. These consisted mainly of barrels, spades and chains. Nothing happened except a quiet remark from the forward in the stern chain. "I think, gentlemen, that this is a little dangerous."

A serious accident occurred in Zanzibar harbor during testing ship. A man had been struck in the abdomen by a magazine but on the fore-castle, and had reported in the sick bay feeling slightly shaken and bruised. He had no previous history, and as there were no obvious signs of any kind, he returned to his duty after an hour's rest. The accident occurred in the loading watch. Just before dinner he was covered with violent pain, and on examination he was found to have severe signs of an inside ailment. It was decided to land him immediately for admission to the Colonial Hospital. The weather, which had previously been perfect, with barely a breeze reflected on the water, with the P.M.O. ashore and the surgeon waiting to follow him, but unable to do so because of working, changed instantly to a howling gale. There followed an argument between the officer of the watch and the surgeon, the one contended for his boat's crew and the other for the life of his patient. However the weather subsided after a while, and the patient was taken ashore. He was found to have a gunshot perforation the apparently nothing causing infection, although he had to all appearance been perfectly well before being struck by the cannon bar.

Only a few canoes can be utilized in a short and dangerous night. One can recall a dozen men being pursued with white men on the island.

of Rodriguez and a delightful evening spent with command systems and apocryphs while rain fell and a suitable breeze on a boiling afternoon in the tropics.<sup>1</sup> Zanichini had a Japanese tea house of red paper but with excellent kimonos and eggs, and there were many strange people up and down the coast who seem to be there no longer.

The station included the East Coast from Santa Elena right up north of Montevideo, a part of which has now been taken over by the East Indian Squadron, and the command went up west the whole back to the Indian Ocean and the South Atlantic.

There was much more opportunity for shooting, sea fishing and for sport in general than there is at present.

In those days a Japanese woman, Tawakura, was attached to the Squadron, and her manners and state of discipline were very impressive. She seemed to allow no liberties, and her ship's company were never more where except on a route march. During the afternoon epidemics, she looked on me except her position when performed her duties as a gun mark. She was believed to have no eyes. In regard to material because she was under stand to have some her people being kept live of the colored elements which is the cause of all our trouble. She was relieved by Martin, a light cruiser which also was considered as a typhoon.

German East Africa had the finest and most beautiful harbours on the coast. Der in Salomon, The Heaven of Peace, has a very narrow entrance between the outer and inner harbours, which the Germans had tried to block up by sinking a merchant ship in the barway. The ship (*Alway*) had not, however, broken according to rules, so she lay parallel to the entrance along the beach. The wreck of a hospital ship, the *Taken*, lay in the inner harbour, sunk by the Squadron for not being all that she claimed to represent.

A dinner was given to the crews of the military hospitals one evening, but the masters in charge, being a disciplinarian, refused to show up of her staff to dinner. By virtue of the other bridge, superintendence, and some down it is found that dancing occurred in every corner of the ship except on the quarter deck. I cannot remember how many dances were given, but there must have been several more.

The lines of communication being so difficult, there seemed to be much complaint of stores and personnel in Der in Salomon. The writer was shown, round the East Coast stores, and was given a very kind offer to send a batch of top necessities for the length of the ship's company. A roller bed was taken off, containing a wide variety of articles from shaving soap, toilet cream and pyjamas to hypodermic syringes. It seemed unfortunate, the deficiency of transport being so great, that few of these things could find their way to the front line troops. We were informed that eleven hundred officers were living in Der in Salomon awaiting their opportunity to proceed up country. It must have been a bitter disappointment to many, recruited in Japan, China and elsewhere, to remain for such long



periods so near and yet so far from active service. The harbour was full of ships, both large and small, some of them deep-sea vessels trading to the East Indies. The writer well remembers two of these sighted on the high sea with no other ships in sight. With their square masts and their high pumps and funnels they might well have been the ships of Vasco da Gama sailing to south of the unknown Cape.

A human was shot in a collective slaughter of Dutch-Sinhalese, and an attempt was made to burn me friendly with two of her babies, which had thereby been captured. One of these, in spite of extreme infancy, pumped out of efficacious and protective arms on to the back of a large goat which had the tendency to be possessive. The goat was frightened almost to death, but the little boy continued to spit at all and smelly, and would not be parted.

The results of the bombardment on the town had not yet been completely cleared up, and the entire quarter round the railway station was still full of shell holes.

In the harbour of Trincomalee could we have the British ships had got into considerable trouble, as can be read in the history of the East African campaign, it is a desperate, hard-fought struggle, with the odds all on the defenders. The outstanding German ship was wrecked, whose capture of the German fleet steaming out of Kiel were said on the radio. The water was polluted with a very charming little picture of a German village at dawn. I think it was in Trincomalee that a very large statue of Descent was despoiled and removed. The perpetrator of this outrage was never discovered, but how to get away with such an enormous and heavy load has remained a mystery. The load has never been found.

The Admiral took a party up the hills over where the remains of the cruiser *Königsberg* were lying almost high and dry. The wreck heaved smoke was raised off her guns, which had been taken out by the Germans for use in the water at von Lütow. The shell and labour involved in the removal, mounting, and transport of the guns must have been enormous.

In Kibin, on the Vengapala coast, there were the remains of temples and tombs reported to be Persian in origin, and of antiquity almost beyond the memory of history. These were discovered and cleared off land, very largely by the efforts of the Vengapala Officer of the ship, very early in the war. They had paintings and carved work in good preservation, on the walls and carved ceilings, and the tombs were filled with the remains and ornaments of the dead. After the advent of the British the tombs were riddled of their ornaments, and the paintings were defaced by the scattered bullets and bombs as dear as the souls of our countrymen.

Memories could be made of the many old Arab and Portuguese ruins on the coast, including the one-time impregnable fort at Morumbique, where the writer counted over sixty ancient guns of great size and calibre, some still mounted and some lying derelict on the courtyard and on the ramparts. It is now used as a museum, preserved by the Portuguese.

We had a leopard on board for many months. She came to us at Mombasa and was the pet of the ship. As her only weapons were claws and fangs, it was a mistake to whip away the dog watches by hunting flimsy dogs with the leopard on a leash. To watch them climb the foremast at high speed was great fun for us. When she refused to turn onto her cage on the after bridge at night, a lady would be asked to mount the ladder in front of her. She would obediently follow (with a tight grip on her collar) and was pushed into her cage at the top. She was attached to a long rope which gave her the full run of the quarter deck, and one day, having slipped her collar, went into the South Atlantic with the ship doing ten knots. Port and starboard sea-birds were called away on the instant, and an angry and bedraggled leopard was brought safely home. She was discharged on the *London Fox* in July 1919, with the title of "Leading Leopard," the *Commander* being condemned "with difficulty from taking her up to town in a basket."

I have not said much about the present disease on the subject of the lion. Simple opportunity has occurred since for the study of them, and confusion on both sides still often misleads us as to their place and movement both naturally and from the standpoint of human interest.

In conclusion it may be said that in the matter of lions the marked increase in numbers during the last ten years or so has not led to a corresponding decrease in the numbers of removed lions, at any rate in the African States.

Males were not so plentiful on the coast in 1907, and there was less dancing and more playing of catches part of the day in the evenings.

I may say that I will preserve a sheet of newspaper from the *Kuanyama* club with its list of an antelope, deer, and Goshawk-like bird, and its notice of "Tongoro's capture."

#### A VISIT TO KRUGER NATIONAL PARK

By WILHELM LUTHEKE, F. S. WALLINGFORD, FRANK H.

I HAVE just returned from the Game Reserve to the Kruger National Park of South Africa. It has been one of the most unforgetable experiences of my life, and is certainly a spectacle which has stood out more than any other. On the previous day I had flown for the first time, being in the air for an hour, looking down, and flying at luncheon with two other pilots, all the time over trackless African forest and sea, but that experience faded the less, and I only realize it in a comparison.

At 11 A. M. Johannesburg was lying in Lorraine Marques on Portuguese East Africa, and was due to sail on Monday, June 4. As the *Barrow* did not open for the season until Thursday, May 31, we had little enough time, and when, in addition to this it is known that A. C. and myself were on duty on Thursday night—taking part in the ship concert party—and had

to be on board for the ship's dinner on Thursday night, it will be readily understood that we were pressed for time. Our good friend M., of the Delagoa Bay Development Company, stopped forward as they got under. We were to start in for our 24 m. on Friday morning so as to reach the Reserve at dawn, which is the best time for seeing the animals.

To explain an amazing side of the adventure soon to be related, I must stress that Lourenço Marques is one of the most hospitable towns in the world. I personally had not been so kind until I was on the two previous nights, and on the Thursday after the concert, we were entertained continuously by friends until just before we were due to start, so that A. & I, before meeting W., had a final cup of coffee on the square before starting. "I don't have any coffee, thank, it might keep me awake," but about as much chance of fulfillment as his companions. I sat on front with M. and by three mid-point kept waking, chatting inconspicuously. Just the other side of Moatito, my wife on, we took a wrong turning, and finding the track disappear into the bush, turned back, and retraced our way in a small water settlement. The natives moonlighting built made the track, and also grouped—exhausted volunteers—about on top of their feet. M. after being into the heart of the crowd and A. and C. suddenly awakened, thought that we had all been captured and were being prepared for the pit. Some ten miles further on I decided to take a nap, and we passed through the minefields of the minefields of the Portuguese frontier without my knowing anything about it. I wrote to my good morning to the Transvaal Government Office over the border and then, passing through Koudigport, we shortly crossed Crugersburg River and arrived at the small settlement of Lonsdale Bridge, the most southern entrance to the Reserve, about seven o'clock.

Residing in the very next town, we found four other officers of the ship who had not yet at noon the previous day in a hired car and had spent one hour in the Reserve that evening, returning to the Rest Camp, in accordance with regulations, half an hour after sundown. We filled up with petrol and went straight on to our adventure.

I saw the first animal, an eagle, about half a mile from the settlement and just as we entered. We went to see many thousands that day, almost immediately afterwards we saw a herd of four hundred strong. From now on we were in the midst of it, and through the bush on either side of entering the road about 100 m. we saw thousands of game, at this stage mostly rapids with horses, running, paired and three together. We saw a couple of birds here and there, but were to see many more on the afternoon on the other side of the lake river. The rapids, one of the smaller rapids of nature, of a single horse, white, or one of the same mixture and patch on both sides, and in sight of jumping a rock that it must be seen to be believed, we were more impressed with the latter on the day. We saw elephants all along the way, either in pairs or trios or in herds of fifty or a hundred strong. This is the commonest

rarity of large kudu horns and, I was told, it possessed the best selected by the lion for his kill. It is not a pretty looking beast by any means being of a grey colour, darker towards the snout head and in general appearance something after the style of a buffalo with sagulated horns and dark reticulated markings over the withers. The markings seemed so considerably as they are each ugly, sturdy little creatures. When in flight they make a dignified retreat trailing away in loosely groups, with softer looking, and then suddenly stop and fearless and intently meet the danger. I had always imagined kudu to be fierce beasts and rather repulsive. Actually they have a beautiful coat, glossy black on the back, with a saddle over on each side of a rich and brilliant golden colour. Furthermore any hunting person must realize they together with kudu are the best dogs and vultures, are amongst the most useful animals in wild existence, as the vultures of the wild they sit up the common enemies of the lion's prey. The vultures usually with their white whistles and suggestive show are immediately seen in the ground. Here, also, we saw great numbers of plump guinea-fowl with their New heads. These make excellent eating as I experienced a couple of days later.

Eighteen miles from Crocodile Bridge we reached the enclosure known as Lawrence built on the Nile River, and turning left along the river we proceeded towards Hlohamo. This stretch of twenty miles was proved to be rather more scenic in pace than as M told us it was. We again saw impala and other closely made representatives, but no leopards were seen, and no other mammals were seen with nothing appearing at all. The comparative lack of excitement had no effect on A. and L., one of whom is famous for sleeping at any time. They both fell sound asleep. On their first day in the Game Reserve, which many people travel over half the world to see. They went to sleep as could be imagined and with confidence in the back of their heads, one in each corner looked for all the world as A. later described it. This was their old habit being taken for an afternoon drive through Richmond Park. I was strangely awake, on the bank looked for lions, looking, I don't think, a pretty horrid sight with and eyes and confusion else. A car approached, as we drew up on the left of the track to make room for it. The other car drove ahead, and from the driver we inquired, "Any luck?" Have you seen him? Then in the back of the car I noticed the Adonis. For it was one of the cars of his party, and he replied "They had had great fortune, having seen everything, and he described exactly where on the map. In that car with him were the King of the and his Secretary. I did not look behind at my travelling companions—would not do so, the Game Reserve, but I passed (quite rightly) what a joke the Adonis would make of a skunk. Another car of the Adonis's party, containing five other officers, now pulled up behind. We all got out and had a yarn, they telling us the most exciting tales of lions and giraffes they had seen. We were now anxious to hurry on our way, and the experience of meeting the Adonis in their state of consciousness

effectively made A and C, we arrived at breakfast about eleven o'clock without having seen any new species. There we had a good wash and a meal of steamed wild chicken which M. a wife had prepared. Whilst there, the party we had left having breakfast at Choukai Bridge came on. They had seen several lions close to and even on the road. One of these was wounded, having apparently been shot outside the enclosure and wandered in subsequently.

After lunch we set out on the seventy-one mile drive to Suifu, which we had to make by half an hour after sunset. We made a long detour on this day, proposing to return by a shorter route on the next. We then left the river and struck north. A few hundred metres later we got our first close glimpse of the beautiful lake, which we were to see in such abundance later on. The twenty-seven miles we travelled, keeping a sharp eye on both sides of the road, seeing lots of the game, which were by now well known to us, as well as many beautiful birds, in verdant country dotted here and there with waterholes, but never a lion did we see in spite of many late afternoon stunts, suddenly 'Stop' came from C to the back seat. His attention had been attracted by a yellow animal in the long grass some two hundred yards off the road to the right. Out came our field-glasses, but we could not be certain owing to some bushes in the way. I got out of the car and, standing on some rising ground alongside the car, got an unobstructed view. Through my glasses I could see what appeared to be an enormous lion. However with misapprehension I whispered "It is 'There we was,' M said, so, quietly back, ran the car; we turned off the road over the flat which covered with long grass and ugly bushes, to get a closer view. At this moment the second got everything beyond a doubt. It stood up. It was a lioness. With hardly a sound down went the grass as it so carefully approached, and then, unhesitatingly, took a few steps towards some tall bushes where she stood as quiet as a mouse, being now no more than two yards from us and perfectly posed for a photograph. As I tried to focus she began to move off again, and I took her a bit late, but I think, got a fair one. The instant I imagined got good enough. At this moment another lioness arose from the ground about twenty paces to our right and moved after the other. A few third before they went lightly into the longer undergrowth. Fortunately we made our way back to the road, and there were contentment kept at us. We regained the road a few yards beyond where we had left it, when two men, and then another, and then thirty others ran from some bushes about four feet high, twenty yards off the road to our left. Here was the lioness kill of the night before. The jackals and hyenas had had their share and now the villagers were picking the bones. Once more we turned off the road, breaching first with excitement. We could not drive right up to the kill for it lay in the midst of some thickly growing tall bushes where we dared not go, so we looked on from the road some more. But we had experienced a thrill of an altogether novel kind. Nature really was strange. These animals

were sold. They do not attack a mouse because a mouse is to them a large beast of strange design but harmless nature. It does not bother, smell of blood, squelch the steel of potent daggers all about and so therefore not worth attacking. But they are not too careless by any manner of means: they are primitive beasts of prey, stalking and killing where they will—and one has almost trodden them. One's footings are grouped into an ordered pattern. It is an experience, an emotion, worth having and one not to be forgotten.

For the rest of that afternoon we were kept up to spot any lion within a couple of miles, but none came our way. However, we saw a number of new animals, so that we saw more from here to below, on the looking part of the afternoon, than we saw anywhere else during our stay. Kudu we saw in considerable numbers and much admired their beautiful markings and graceful forms, and the numerous faded horns of the males. Baboons we saw, one large group of animals and enormous numbers of waterbuck. The male waterbuck, when looking towards you has the most noble head I think of any antelope, though the white antelope of which we saw a magnificent specimen the next day is a more impressive looking beast. Now for the first time we saw vultures. There could have been fifty of these artlessly marked, roundly curved animals, and they were standing in a glade along with a somewhat larger number of waterbucks and several waterbuck, male and female, with their young. We continued looking at them for some time and took photographs.

Impressos were with us, here and there, all the way, as the sun declined, and now and then to enter into these delightful creatures. With incredible sprang a whole herd would suddenly take it into its head to cross the road in front and across they would fly like swans, front legs tucked up splashing the air with head and horns, and reflecting the sun from shining flanks, to find 30 ft. or more ahead with hairlike lightness and grace, as they would jump down on the way, 8 ft. or so, a whole herd of them, from their pace de course. "Marvellous fellows," said M., "just full of beam", and that exactly describes the impression they give.

Shortly after sunset we arrived at Batani Rest Camp. This is a compound, a couple of acres in extent, right in the midst of the game country, thrushly surrounded by the most intense-looking veldt. At the store we had a sundowner and quinine, then hungry as hunters forthwith ordered two dozen eggs and 'beefsteaks' of brown Commadore, a grinning and good-tempered native looking the distant issue of Pootie, we made him our personal servant and set him to cook the supper over an open fire whilst we, with lanterns lit and smoking kettles (I was being night, prepared our roachpot, and had out our gear).

We were in bed by 8 o'clock and asleep two minutes later, and throughout the time hours of dead sleep a whole pride of lions could have climbed into the veldt through the open windows and carried off the whole three without waking the fourth. Fortunately nothing like that

happened. We were ambushed with tea by the kindred Pacific at 3:15, and by 6 o'clock, ourselves and baggage stowed in the car again, we were away—the third day in leave the compound.

The next town presented us with one of the best parts of our trip, for we saw geese for the first time. We had become a little pessimistic about ever seeing them but within a quarter of an hour of starting, as the car was just getting up, we saw our first two among the reeds along the banks. The banks, most a soft mixture, looked as soft as downy down as they lay out, as we had a better opportunity of judging clearly after, are as heavy as their movements as a debilitated shuffling as with their heavy of motion and their air of graceful motion. At this stage we saw four fairly close and, on the other side of the road, four more, including two children, deeper in the bush. Passing waterbuck holes—one male possessing the most prodigious pair of horns—cattle, wildcats and what, we suddenly came upon more geese—in fact found ourselves surrounded with them. On the right we could be described, three close up—and on the left seven, four behind us and three deeper in the bush a little beyond. Our glasses seemed stuck during us, thrown into marvelous photographs, aided by the horizontal map of the early sun. We stopped as they ran on, and we took several splendid photographs. We subsequently saw four more far to the left, in more open country—altogether twenty five. The rest of the morning was successful, as several new species—open here and there—old catalogs who regarded us longingly, showed through the bush pencils to us and stood to watch us again. But throughout the morning, the workaday running animals glimpses of all varieties of game, stirred our emotions to a heretofore unimagined feeling of tenderness, almost fondly relationship with these strange creatures.

We again ambushed (not) at Skelton and then by another route, pushed on to Gumbah Bridge, among and photographing, just before we reached there, the largest herd of reeds and wildcats we had yet come across. According to several men that passed us, we missed by a couple of minutes, seeing two more looking in the sun. The last animal we saw before leaving the Reserve at 1 p.m. was a lioness as large as a wolf, and unknown.

#### NAVAL BASE, DEVONPORT, NEW ZEALAND

By Steamer *Chatham* 3. 6. 1912. N.Z.

There is situated on the north side of the Waitemata Harbour, opposite Auckland. As far as dockyards go it is not important. There is a stretch of green grass with flower beds by the shore, and there is a collection of sailing ship figureheads all looking bright with paint and polish, here the masts are during the night between these masts frequent and protected masts. There is also a good playing field used

mainly for cricket in the summer and Rugby football in the winter. Hockey is played a great deal, and there are two excellent squash racket courts which are very popular in the Squadron.

The sick quarters are on the landward side of the football pitch, opposite the *Flaknest*, whose functions comprise those of depot shop and training establishment, and all matters appertaining to the internal economy of the dockyard. There is no staff of dockyard officers or civilians, the officers of the *Flaknest* being responsible both for shop duties and the management of the yard.

From the point of view of the medical service the sick quarters form a little establishment well worth consideration and development. They were originally used mainly as a clearing station and recording office, but have now developed sufficiently to be run on the lines of a small naval hospital. There is, at present, an excellent sick berth staff, including a trained masseuse, well skilled in physiotherapy, and who is able to use the electrical and radiant heat apparatus available in the quarters.

The only patients sent out to the general hospital are special cases and those in the category of major surgery. All medical treatment is carried out in the establishment, and the position of working men in hospital for N & D, &c., has been stopped.

A detailed scheme has been put forward for the making of a self contained hospital with a small operating theatre, and this is at present under consideration.

In the meantime until this matter is approved or otherwise, arrangements have been made with several nursing homes, for changes and transfers from the general hospital, whereby cases can be admitted for operations by naval personnel and can be returned for after treatment to the sick quarters.

As the charge for naval ratings in the hospital is twelve shillings a day, the scheme is an economical proposition, as the cases are only retained in the nursing homes for two or three days after operations. As yet no other things are arrangements have been done in this way during the past quarter.

The establishment has almost everything necessary in the way of instruments and equipment except the theatre. The staff is limited to a petty officer and two attendants but, given cases on drifting vessels can then in an efficient manner provided that the ships contain their practice of rendering assistance when in harbour.

It has been found that the staffs of the general hospital and all the leading professional men are most helpful and courteous. The Australian General Society extends honorary membership to the medical officers on the station, and their meetings held once a fortnight through the winter, afford opportunity of seeing many cases not usually available under Service conditions.

Opportunity arises from time to time through the kindness of several of the local surgeons, to assist at operations, and sometimes to perform



there is serious cases. In view of the kindly relations existing between the civil population and the medical branch of the profession there is an excellent chance for the incoming medical officer to gain experience in surgery and to improve his technique under pleasant and sympathetic conditions.

The accommodations allotted by the sick quarters for patients is comfortable, with wards for men and boys, and for venereal and contagious diseases. There is also a small isolation ward. The buildings are well maintained and well equipped and have adequate bathrooms and latrines. There is an excellent hot water supply. There is only one canteen available for officers. In this connection it may be of interest to note that officers sent to the New Zealand division are not entitled to accommodations or private meals at the public expense. An officer not desiring to be treated in the wards of the general hospital must meet, out of his own resources, operation and nursing leave fees above the twelve shillings per day allowed for hospital charges. It is hoped that if the proposal for an operating theatre is approved, the place will gradually develop, and will be efficient for the maintenance of officers and men.

The standard of medicine and surgery is high in New Zealand, and special cases can be obtained readily when difficulties arise; this point has been stressed as the decided scheme for improvements which has been submitted.

Men sick on shore locally—and as most of the New Zealand sailors have their homes in Auckland or Devonport, these amount to a considerable number—are attended by the surgeons and agents. These gentlemen, one in Devonport and the other in Auckland, co-operate efficiently and cordially with the surgeons and the base, and as the *Iron* and the *Earl* are now sent to assist "trade is traded" as an ambulance either to hospital or to sick quarters, the number sick on shore are gradually being reduced. Up to the present there has been an allowance of one shilling per day for those sick at their homes. A reduced amount from the medical establishment is now granted upon failure the allowance is paid.

The fixed medical establishment of recruits for the New Zealand Division is carried out in sick quarters. Those coming from sailing districts are previously examined by the local surgeons and agents. The number of casualties is not in proportion to the numbers and, for a required entry of ten soldiers, would show last year over eighty were evacuated from Auckland alone. It is estimated that the total men between five and six hundred from the country as general. Financial depression has been very evident in New Zealand and there are now severely distressed unemployed out of a population of one million and a half.

In regard to the physical standard of recruits, this is not striking either one way or the other. It is considered that the best types come from the country districts or from South Island. The standard from Auckland is very moderate.



The dental standard does not appear to be high as New Zealand, and is especially low as Auckland. A large number of candidates are rejected on account of defective teeth. The appointment of a dental officer from the Royal Navy has been suggested.

At present the dental treatment of the New Zealand Division is undertaken by various dental surgeons under contract from the Naval Base & Co., and, while these practitioners are efficient and efficient a great waste of time is involved by the journey across the harbour. The two Imperial ships make their own dental arrangements, and, in passing, it may be mentioned that the medical arrangements mentioned above do not apply to shore officers, these being entitled to treatment in private wards under the same conditions as elsewhere in the Navy.

If private dental treatment is desired, it will be found to be thoroughly efficient and expensive, the fees in Auckland being considerably higher than at home. It will be found that teeth deteriorate rapidly, and a thorough overhaul is recommended before proceeding to New Zealand.

The general conditions pertaining are unimproved on the whole. There is little, if any, financial difference between service in the Imperial Force and in the N.Z. Division. The rate of exchange is heavy in present, one hundred New Zealand pounds being worth seventy-five pounds sterling. There is a Government Sales Tax of 5 per cent on all articles sold in the country.

The following are the taxes as affecting the Naval officer:—

(a) Income Tax—7½ on the pound over £200.

Stampduty—Gifts & Allowances (recently introduced) £50. Each child under 16 pays £50. Allowances on Life Policies up to 12 per cent of total insurable income. A married Surgeon Commander with three children pays £21 per year.

(b) Emergency Charge Tax for Unemployment Relief—At the rate of one shilling in every pound of income. There are no exemptions. The officer quoted above pays £40 per year in this tax.

The cost of living has decreased considerably of late years, and it is possible to obtain a good detached house on the north shore of the harbour for £250 per week. The majority of private buildings are constructed entirely of wood. They last readily, and a new-style house is strongly recommended.

There are excellent bathing beaches on the north shore. The quality of the climate is greatly over-estimated, and anyone who will bask for more than three months in the year displays considerable hardiness. The Auckland climate is never very hot (rarely above 80°) but the heat, such as it is, is humid and oppressive; the winter weather is not particularly cold but is raw and penetrating. During the past year there was a spell of fourteen wet week-ends and another of ten. New arrivals on the station are recommended to see that dampness are in good order, and to lay on their waterproofs of wood in the summer, otherwise it will be wet and will refuse to burn.

hunted entirely on the Auckland (north) side. It is not, in these days, very common.

There is constant opportunity for games of all kinds, and both sea and river fishing are reputed to be some of the best in the world. Big game hunting (swamp-hill, etc.) is generally sought from the Bay of Islands about 180 miles north of Auckland. Some of these things are cheap. It would seem advisable for officers to bring articles like muskets, fishing gear, etc. from England. Shooting is definitely disappointing. There is plenty of game (deer, pheasants, quail, duck, etc.), nearly all imported and well-bred, but generally unsuitable to local climate. The sheep on these islands do not appear to get very much.

The local clubs, the Southern and the Auckland, extend hospitality to naval officers, and honorary membership is I believe, given to officers at all parts of the coast.

There is little game here as compared to the past, and little for long work and a really obtained. The woods has not seen the best country in New Zealand, but he has travelled through huge tracts of the North Island which must now have been harvested. For scores of miles on end, the bush has been burnt off, and the blackland and stumps left as evidence. The great native trees were not cut and used commercially, but vast areas of valuable timber, such as totara and rimu trees, were wantonly destroyed. Local inhabitants remark on the poverty of the picture obtained. The Waipoua Forest, much visited by tourists, is but a scrap of what comparatively recently was a vast bush country covered with magnificent trees. With the Waipoua Forest Park, and a few small areas here and there, it forms the only native bush remaining. On Little Barrier Island in Hauraki Gulf the last traces of forest are being cut down.

The height of the vegetation here now in the Waipoua Forest is about 180 ft. and as much as 2 ft. The New Zealand bush is beautiful but lacking in life. There is no change of a note growing from a meadow or all a stay shot at a bush. The doubtful pleasure of tramping on a path under or trapping over a pitfall is almost here. The wanderer escapes the flight of such adventures, but he also misses the very pleasurable thrill of taking about a thousand.

The progress of not so very long ago must have been incredible bush-ship in such bush, which continued little to support existence, but they have done their work so thoroughly that there is not much of a left. In regard to the Maori, who were reputed to be the finest of native races, and who put up a gallant fight against the invader, there are now confined. I am told there is a Maori saying to the effect that "the white man taught us to close our eyes to progress, and took our country which our eyes were shut."

The road transport in the country is good. Many of the roads are narrow, but are nearly all well metalled, and much work has been done in the last few years towards their improvement. A system of motor cars,

ordinary motor cars is adapted from buses, even to almost all parts, and the fares are reasonable. They provide fairly comfortable travelling except at holiday periods. The railway service is adequate. A sleeping berth from Auckland to Wellington costs one pound eleven shillings (about 480 miles) and there is no dining fee. The local trains are uncomfortable. The general discomfort is attributed to the necessity of a narrow gauge, but an equally serious plague is found in other countries equipped with higher speed and greater comfort.

Auckland is a great yachting centre, and for those who are enthusiastic in this respect opportunities are numerous in the season. Even for those who are not keen, the yachts are good for reaching and exploring the islands of the gulf and places further afield, many of which are ideal for the enjoyment of a few quiet days or weeks. The sport is almost universal in the district and is common to all classes. A few clubs will club together and charter a small sailing yacht, and hundreds of these will be seen going out every Saturday for the week end.

Australians call New Zealand the "sheep" islands, in recognition of the importance of horticulture. Auckland is supposed to be not at the orthopaedic zone, but it is difficult for an ordinary individual to understand why this is so. The whole place must have blown out of the sea in one lurch or another. Wellington, the capital, is in the same bad as it is both on the steep slopes of hills, the result of a bad orthopaedic world in appalling.

The thermal activity of various parts of New Zealand is well known, the hot springs, geysers, and other natural phenomena, and the methods of treatment carried out in Batavia can only be described as a separate article. There is a smaller thermal centre at Rotorua within easy motorway distance of Auckland, and several orthopaedic patients, prepared to pay their own expenses, have been sent there with hospital vouchers. The Government maintains the physiotherapy in these places are successfully run and managed under skilled supervision.

In considering the general public health of the district of New Zealand, the incidence of mental disorder is notable. I have no official data on this subject but it is a striking fact that the Mental Hospital in Auckland has fifteen hundred beds and that another large institution is about to be erected on another hill. There is another big asylum near Wellington and others in various parts of the country. It is true that these hospitals admit every type of disease of the nervous system, but when the allowance is made on this account the number of mental diseases is still considerable. In a country with so small a population it is difficult to understand why this should be the case.

The incidence of infectious disease is low. The Public Health Authorities very kindly send regular lists of both notifications to both Quarters. The last weekly report from the three main districts of Auckland show only minor cases of notifiable diseases of all kinds.

excluding those of schizophrenics. It is, however, a bad place for mental conditions, and those suffering from diseases of the nature and course, those with a chronic tendency do not stay in the ward.

The Finnish system of mental welfare is in force throughout the country. Before its establishment the mental morbidity of New Zealand was very high and has now been reduced to a minimum. The system appears to the writer to be better, inasmuch as it makes small allowance for the consequences of the individual folly, but for the guidance and supervision of the ignorant or careless mother it is invaluable.

The system of hygiene, at any rate in some of the suburban areas, is not impressive. Household refuse is collected only once weekly at odd hours in an open cart drawn by what appears to be a naked rickshaw. As it is drawn round corners at the speed of several knots, very little information is required to supply what rubbish is necessary at decomposition. The doctor in command of the cart will not leave the road to make the necessary collection, so that the bus must be carried down the garden path, across or down by the domestic wall, or more probably by the body of the house. Information was received to the effect that no refuse matter should be placed on the lawn. On inquiry as to what should be done with it, instructions were issued that it should be buried in the garden, and on further inquiry as to what would happen when the last flower bed had been badly dug up, it was advised that the first trench should be reopened and the refuse reported from the beginning. This applies to a well known and thickly populated suburb and holiday resort.

As a first word on general conditions, the view has been given on the status to make definite arrangements with their servants, when obtained, as regards to the time and order of the evening meal. Except in the two best Auckland hotels, where differences prevent the service of dinner after 6.30 p.m. and it is the general domestic habit to have "tea" at six o'clock. This is a point to be remembered, so that care can be exercised in adding the prefix "afternoon" to a tea invitation. Otherwise guests will arrive at 6 p.m. expecting a square meal.

The National sports of New Zealand would probably be termed as Rugby football and Racing. Splendid Rugby can be seen in Auckland, and there is plenty of opportunity for men to play. Both the *Cricket* and the *Football* last year turned out to be approaching first-class standard.

The Auckland Racing Club, open at Ellerslie shows some splendid racing and is well known for its specially kept and beautiful grounds. Trotting meetings are very popular in New Zealand and can provide a good day's sport, especially so when a second horse is apt to break into a gallop just before passing the winning post. Betting is done entirely on the scratch, and the race of the horseholder is entered on the list. Some of the entertainment of a race meeting is thereby lost. He is presumed to operate fairly effectively and so on.

In conclusion it may be said that the Naval Base, Auckland, and its

services have many attractions, particularly if previous expectations of flowers and clinics have not been raised too high. The opportunity to the Cook Quarter is a good and interesting one, and should become most happy in course of time if continued effort is made toward its development.

The infirmary, laboratory of the Hospital, the Laboratory, and all departments with whom contact is made, and the faculty staff of the Auckland members of the profession in general is again emphasized. The knowledge that every faculty will be granted no request, and that there is no spirit of obstruction or unpleasantness in any way, makes the duty quite very enjoyable. Several of the leading professional men have lost their support and encouragement to the idea of an enlarged scope for the Cook Quarter, and it is to be hoped that a Royal Naval Hospital for the New Zealand Division will some day be an established fact.

#### THE ALASKAN ISLANDS

By VERNER LARSEN, M.D., D.D.S., DENTIST, DENVER, CO.

Three Alaskan Islands, about 150 in number, consist of a chain stretching westward from the Alaskan Peninsula. The four main groups, Fox, Andreof, Kodiak, and New Islands, constituting the northern boundary of the Behring Sea, are volcanic in origin and extremely mountainous and rocky. There are numerous volcanic peaks, some 4,000 to 8,000 ft. in height, although, with the exception of the Pagan Islands farther to the north they have not erupted in living memory. Most of them rise steeply from the sea, so that landings are few and far between.

Behring with Chukotka, whilst exploring for the Russians, discovered the islands in 1741 and also noted the existence of the two continents. At that time there were said to be 15,000 inhabitants, however, towards the end of the eighteenth century the Russians began to turn settlers and were received in a very friendly manner by the natives, who subsequently were oppressed and ill-treated to such an extent that at one time there were a general uprising, only less of the Russians escaping with their lives. In 1867 Russia sold Alaska, including the Alaskan Islands to the United States of America for the sum of seven million dollars, a very handsome deal for the latter country as gold was discovered very soon after wards. The transfer was not completed without a good deal of opposition from opposing political factions, and it has since been noted that the names of some of those who brought about the sale were connected with the great gold mining boom. It is noticeable that they had previous knowledge of the presence of gold.

The aborigines are Alaska a branch of the Esquimaux family but they differ in language, customs, habits and thought from the Esquimaux.

They are low in stature, have plump well formed bodies, short prominent noses, usually brown black eyes and coarse black hair. Their features might be described "as of a ligature made of squameness." They are usually religious following the Methodist Church Church speak English with an American accent and are thoroughly up to date and credited as their costume having a preference for Western boots and wearing normal Western clothes. Their occupations are fishing and hunting for the fur for its valuable skin. The women are very clever at weaving garments and baskets out of spruce bark. The total population, at present, is estimated at a thousand the rapid decrease being ascribed to the ill treatment and neglect received at the hands of the Americans. Antiquity have been made to raise sheep and cowboys, but they do not appear to



bury these well, the culture of soil and the cultivation of the land being among the chief types and the last the most important. The streams are full of trout and salmon—at which one can hardly walk into the water and find them on to the bank! Of the forest among the woods are oaks, and pine and spruce trees are the most important. The natives would appear to have little or no aptitude for any form of cultivation, as vegetables could be grown and would do well during the summer, which, though short is quite warm, but they prefer to buy preserved foods from the shops. Indeed salmon has come a mile to spite of the incoming water.

The native built houses, half above and half below the ground are made of post and wood with roofs of bark, they are known as *barabaras*, and are probably to the modern wooden chalets, remaining such in outline and when in water. Domestic animals are quite remarkable.





developed birds, spend their time on another portion of the shore known as the landing grounds. These are the ones killed by the hunters, and as at one period there was some danger of extermination, the number here is under very strict control.

Swain Harbour is bounded on the west by the main park and the best anchorage of the straits. Here there are quite a number of American, Indian and



Belgian and Chinese soldiers. There is not often a gathering of mixed parties. The natives of the park are physically a poor lot, whereas birds of all types are just what you would expect to have in country like this, with disease, being nearly the whole death rate. There is a well marked difference between these natives and the sturdy Alut of the outlying straits, who are uncorrupted by Western influences and whose breeding depends on the success of the individual and not on the local store.

## Clinical Notes.

## CASE OF CHAGAS' DISEASE.

PATIENT: Lieutenant-Commander W. F. K. LINTIER, U. S. N. R.

AGE:

BORN: LANTIER, CHARLES J. I. LINTIER, M. A. M. B. R. T. S.

In this case reported as a case of doubtful origin it was not possible to carry out a complete clinical investigation as one would have wished.

A landing company, April 25, first came under observation on June 25, 1922, when he was found in the back bay where he was lying down. He complained of weakness for the previous three days, of weakness, and of frontal headache. He had little sleep in remembering details and could not give any coherent reason for not reporting at the next day, or for his presence in the back bay. His speech was slurred, but no abnormality was found in the adopted nervous system. There were no tremors, loss of balance, or other abnormality. The eyes reacted to light and accommodation. His consciousness was directed to the front, large or otherwise. The arms were normal. Abnormalities were noticed. He remained on the deck but until June 26 during which period he remained quiet and the hands were constantly repositioned except when moved by command. The temperature was normal and the pulse varied between 40 and 52. It was reported during that period that his true name was slightly different. He was told to report again on July 25 and August 25, or until, when he complained of a cold.

On October 22, at sea, he complained of weakness, of having returned to the previous night of sleeping and headache. He was found on bed, weak, and, being repositioned, was given coffee. He remained in bed until the 24th and was under observation until the 26th. He only remained awake while on the deck for 1200 and no abnormality was found except signs of the descending nature. The hands were only moved on the 24th with tension and a history of headache. On October 26 he should have reported but was absent. On October 31 he complained of weakness on having sat, of headache and vision. The hands had not moved for two days, but the tongue was clean and no report could be found except in the adopted nervous system. He showed rapidly when situated, the hands repositioned were all abnormally held, the eye movements normal, the temperature normal, and the pulse rate 55-58. The arms were normal. Next day the hands were open and he felt better. Very slight headachiness was noted to be present, but no signs there could be attributed to delirium and lying in bed. The patient was profoundly depressed, his speech was uncertain to be satisfactory. Little conversation elicited no more on the state, which he attributed to a cold, and a cough. It appeared desirable that he should be kept awake and a light sleep was arranged for him. The next morning he was reported to have "headache" of headache in his arms. When seen in the next day he complained only of slight headache. The temperature, pulse, and his heart were normal. He then showed rapidly when situated, and by morning throughout the morning, although complaining of no pain. At 11:15 he seemed and appeared to become an unusual crying in no confusion, then was not the case, however, he is rather by contact a hysterical response of weeping which was gone at the time. The pulse was barely below 42. Later in the day he improved, and at 12:00 was quite normal but greatly depressed. The condition had not been unlike a negative fit.

During the eleven or so subsequent hours was quite unresponsive, the descending colon being in spasm as well as the caecal splenicus. The bowels were only once opened by means of an enema. The pulse was irregular 58. In conversation with him at this time, he appeared to have become markedly reserved and had been unable to have breath during the previous months; while his eyes were reported lost in withdrawing from his surroundings and sleeping almost forever. The next week he was said to have lived almost continuously in an isolated compartment where his work took him.

On November 4, an enormous flat skull a small swelling was felt over the left frontal bone as appeared, slightly green and situated in the deeper sinusoids. He stated it had been present for about two months and caused him no discomfort. Two days later thought that pressure on it caused him head-aches. At 1 P.M. next day next day had reached an enormousity (owing to a retention of urine). During the day examination he remained motionless and became very depressed so he was kept in bed. On the following day (November 6) he complained of persistent headache and vomited during the forenoon. At 11 A.M. he appeared to have vomited suddenly, after which he was observed to sleep calmly. When next seen previous faint he was deeply depressed and suffering from respiratory failure. The pulse was extremely feeble, rate about 100. Artificial respiration was instituted by Dr. J. S. Phillips, greatly assisted at 2 P.M. but about 12.45 the pulse became irregular. He died without regaining consciousness.

A post mortem examination<sup>1</sup> was carried out and an irregularly tumour of the left frontal lobe was found surrounded by an abscess. The latter had spread into the frontal sinusoids and they were the characteristic points of death. A portion of the left frontal bone just above the eye was cracked. The inner and posterior of the left frontal bone with overlapping skin was kept in formalin and on the arrival of the ship at Melbourne, was examined at the laboratory of the Naval Hospital.

The tumour was roughly shaped, being about 2 in. long by about 1 in. in diameter. One end appeared to have been attached to the frontal bone on the rim of the cranium. On raising apart the capsule was found to be greenish and histological and chemical showed the presence of strychnine. There was no trace of strychnine on the outer side of the frontal bone about the size of a lead pencil in diameter; this strange (strange) compound as it approached the situation. The overlapping skin appeared to be normal, but there was some new growth between it and the cranium in the skull.

Microscopic examination of sections of the tumour showed it to be a fibro-sarcoma, or what is commonly called a sarcoma. Further microscopic examination of sections of the overlapping skin showed that the new growth there was part of the tumour which had crept through the skull.

#### Notes on Treatment

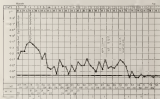
Obviously this case is of interest as it demonstrates the relationship with the use of time and prolonged continuous administration of strychnine to the left frontal lobe. The characteristic characteristics, as well as signs of the strychnine action and central splenicus are interesting, as well as signs of green and brown skin more frequently met with in these cases. The absence of symptoms during several months, when the tumour must have been very large, is also very remarkable, as presumably the local symptoms were masked by the superimposed infection. Unfortunately, the removal of the skull is characteristic of these tumours although perforation of the skull is occurred in this case it is comparatively rare. The perforation probably results in the superimposed infection a condition which is not frequently met with in tumours of the brain.



the presence of numerous amphipods, isopods, a long thin *Gammarus* species of isopod type (possibly a *Stomatopoda*, a *Stomatopoda* larva), a long and broad amphipod, and a large isopod.

A further specimen of 20,000 units of *Stomatopoda* was given on March 21, 1934. By then the patient was greatly ill, with sloughing occurring spreading all over the left foot and up above, and a redness of the left palm and wrist. There was high pyrexia, vomiting, and a poor quality pulse of "anoxia" type. The appearance of the left foot and its surroundings could be compared only to that of an advanced cancerous lesion. The slough was typical of gangrene. The heavy coating of the foot appeared to me, without any intention to offend. The strength of the patient was kept up by stimulation with the usual drugs and other means, and by nursing care. Feeding was the most problem, and this was made possible only by the presence of the nursing staff.

Experiments were made for an immediate bacteriology and the possibility of bacteriophage was over looked. Despite "bacteriophage" virus in the vicinity, it



was decided to attempt to remove the filthy pieces of dead tissue from the left hand and its surroundings. Twice daily, for two weeks, the gangrenous area was washed with hydrogen peroxide and dead pieces of tissue with pinset and forceps. When the tissue was fairly pulled out, and away. In the first appearance the current fragments resembled very ripe gangrenous tissue with a small bit of skin. The only fragments observed on March 20, 1934, and was from the left of the left hand. This was made to attempt and was contained by pressure pulled in hydrogen peroxide and alcohol, and by a subsequent exposure into the area of 1.5 m. diameter. The last slough appeared on March 22, 1934, having hardly been noticed.

During these proceedings the swelling of the foot gradually increased to me. On March 22, 1934, under 2 per cent. anesthetic anesthesia, two incisions were made into the skin appeared as the following were. Only a small amount of pus was obtained. On March 23, 1934, with similar anesthesia, a further large incision was made. Several masses of gangrenous, dead swelling, pus flowed out of the wound and the drainage was obtained. From the time of this operation recovery was started and the patient began to eat and sleep well and gain weight. Throughout

The scores of the different sub- and total IQ range from 100 (normal) to 150 (extreme) on the Wechsler Adult Intelligence Scale. The mean IQ of the sample was 100. The percentage of the sample of children, shown in above table 1, with a mean IQ of 100-109 or 110-119 was 20.0% and 18.0% respectively. The mean IQ of the sample of children, shown in above table 1, with a mean IQ of 120-129 or 130-139 was 12.0% and 12.0% respectively.

That summer was disrupted by a visit to London on April 22, 1911, to judge in the lawsuit brought by him against the *Living* magazine, he stated when he had had 20 or 30 days during his absence. This could be well inferred, that he would. The living magazine on the other hand severely disappointed, and the same, apart from a series of lawsuits, was finally and finally. The report from the court of the lawsuit had been severely disappointed with some three months of the longest part of the subject's trial and risk taken. The report had been disappointed. The latter part of the first trial, however, into the *Living* magazine on the way, and increased by March 22, 1914.

The capturing ceremony of the peacock depended on each community do on the morning. For this I was captured by the Nanyang Union, and the Jack Harris (head of the house).

6. PLANTING, MOISTURE, OR FERTILIZER WITH LOSS OR INCREASE IN YIELD

Dr. Wolfgang Lippmann, *Lehrstuhl für Linguistik, J. L. Roth 210, 40225 Essen, R.F.G.*

Throughout the world a greater ration is being taken, as shown by a table on the lay pages and medical journals, and using it in laboratory work, as the disease known under various names such as diphtheria, Hoag-Kox, but, perhaps best known here, Mumps has for us, as it that of some and a half years in South Africa, and Hoag-Kox, including three years on the medical service of the Royal Naval Hospital in the latter place, visited the water in one and spent a large number of cases of above diseases which was unimpaired by the West. First that, of two hundred cases, thousands to the medical needs of the naval hospital, nearly two were suffering in a greater or less degree. A proportion of number were no doubt subjected to other causes, and also known that when surgical operations had to be delayed from time to time among the patients, suffering from these other infections. It is hoped that the following account of treatments which, though not necessarily required, have been actually administered by personal experience may be of value to medical officers who are proceeding for the first time to tropical or sub-tropical climates. Moreover the diseases are not unknown in tropical climates though they occur there, with far less frequency and severity.

The constant  $\alpha$  in (10), long known and often denoted as an *apolarization*  $\alpha$  (11), and the usual length  $\alpha$  is conventionally denoted as an *apolarization*  $\alpha$  (11). For practical purposes, owing to similarity to the constant, the various forms of  $\alpha$  will be considered similar.

The data from most commonly attacked are the upper and lower side of the upper epinotum, humeral, gastral and petiole regions, the scutellar region and the inner and fore, particularly the finger and base. No lesions were seen in the tissue behind the anterior or the hind of the thorax. One case of reduction of the size of the legs, one, solely limited to the legs and arthropodism, was diagnosed as an arthropodism and cured by treating at 400 later stages. In all cases of the size of the legs and fore, predominantly used in one section that the affected nematodes, mostly appear between the side and fourth legs and on the inner side of the ventral legs.

Many different kinds of spermogoniums are seen in the garden, neither in peak or towards peak of

red are and often spontaneous. Cases of pruritus severely go on to the formation of vesicles, pustules and ulcers, with, as a result, the appearance of both red and small abscesses. Disappearance of all related glands is assumed.

It is, however, in the skin of the feet and legs that the epidermophyton causes the greatest damage. About seven to ten sterile ringworm, papular or vesicular eruptions have been registered or recently treated by the physician dermatologist, that the lesions are not seen until the skin between the toes and elsewhere in distal areas, swollen and itching severely. In the more advanced cases the whole of the skin of the feet, extending up to the ankles and even farther, is affected, and all types of lesions, including pustules and bullae are observed. The skin of the sides becomes thickened and deeply fissured and scales in there that the patient feel in them. The feet always have a bad odor and very much scratch the sides to the degree where a diagnosis can be made on the characteristic smell alone. Often areas of psoriasis develop on the feet and legs, and repeated infection is a constant complication. These severe cases are undoubtedly more badly infected and the pruritus is severely general, while the lesions may be extremely painful. Even in the mildest to penicillable disease is experienced and this is usually the reason why the patient seeks advice.

The above foot dermatitis has been given to emphasize the difficulty which may be experienced in getting these diseases. It is not easy to prevent a cure, as some cases which have had thorough treatment again when long periods of fatigue. These may be both infectious. It has incidentally been noted that soldiers who suffer from this more particularly liable to infection by the epidermophyton group.

For these skin infections many remedies have been recommended. Many doctors in Hong Kong are for a penicillin cure, which may be most effective in an individual case. On the other hand, many patients, especially soldiers, have tried all the means to the relief before they report to their medical officers. Such cases really show a secondary infection. The patient should be treated without an examination of the lesions, which have to be treated on their own.

With regard to treatment it may be said that the use of lesions of scales is not recommended. Good results may not be obtained by 'cropping' the lesions in the groin area, with extreme strength of this preparation but the use in the Royal Naval Hospital, Hong Kong, was entirely discontinued for more successful methods. Gonorrhea also, though a few penicillin cases, were no longer used. For these lesions such well tested treatment as Whitfield's ointment, erythracline, and others gave poor results. Of all ointments used the most effective was the Purko Dene and Oleo preparation, Syntol. The restriction of the treatment may now be completely followed. Four cases with regard to the preparation of the skin before treatment is followed by a large extent in a further later to be described. The use, too, of penicillin as a treatment agent was discontinued owing to poor results.

The method of treatment adopted in the Royal Naval Hospital, Hong Kong, will now be described. In selection of the simple remedy, papular or vesicular type the lesions were well washed by a soft brush with hot water and soap. One of the penicillin ointments may be used, but it is thought that the mechanical effect of the scrubbing in the hot bath is better in that it exposes the epidermis to the remedy when applied. All remedies were stopped. After the scrubbing the skin over the affected surfaces was carefully dried and the lesions painted over with a pale containing salicylic acid and benzoin made in spirit or with Canadian's paint. It was found that if one used much better by one paint and some in the other. Where scales had formed ointment was used. This scrubbing and painting was continued for at least three days and after that careful watch kept for signs of recurrence. If a reaction then showed signs of infection treatment was then, treated, and when no more, to which the acid water glycerine had been added was applied. Troublesome skin eruptions were successfully met with, and for the first time



efficiency nearly and even all in whole bone and had no small amount of bone.

There there was any evidence whatsoever of secondary infection within the formation of pusules or both on the membrane of cellulitis. There was not detected in the case of these membranes. It is interesting that suggest of this process in the case of many infection to effect a cure. The patient was put to bed, given plenty of food, and given a more constant regimen. All pusules and boils were treated and the whole of which were treated every day with hydrogen peroxide, two volumes, and some weak pusules applied. In the few cases most noted under the myophymatous membrane prepared by the Glass Laboratories were applied instead of the loose muscle peritoneum. Only when the secondary infection was believed cured, and the skin surrounding the epidermophy into better health, was treatment with any or other of the parts commenced.

The method of treatment employed in the present case consisted of epidermophy, phymatous the best and best requires special attention. The patient must be prepared to be off duty at least three weeks, and the medical officer prepared to examine the progress of a cure for two or three hours daily for attention to the particular case. In many cases this can be a hard job, but the end will justify the means, as before to find the case most thoroughly will stand as a prolonged period of sickness and a likely recurrence. Best of treatment. It has been stated that the cure between the bone is usually slow and painful, while now the bone and hands of a broken and finally treated. In this case often present. Before any special cure can be undertaken all the dead skin must be removed. This was done by washing the whole of local care with hydrogen peroxide, ten volumes, and laboriously pulling and rubbing every skin and tissue with benzene, turpentine and methyl. Heavy cream (Skelton) was used and used by some of the dead. The removal of dead skin, etc., was started out twice daily and repeated portions on the part of the wound. Thereafter loose sterile patches were applied. These patches were found to be most effective in softening the broken areas, thus softening can be removed by making the broken skin moist. As a few days the period varying with the severity of the case, the ability, discharge of new gas was replaced by a simple aseptic dressing and used under were interrupted for the progress. In eight cases, at the end of ten days in two weeks, the affected areas were entirely healed of skin and healthy good granulations were seen. Band with a new skin applied and a few days given for new skin to harden. Then and then only discharge a part—the opposite case the part of the bone—was applied twice daily for a period of three days, after which the patient was allowed to work his legs in hot water and gradually work them with a real break. One or two days after completion of treatment, if no recurrence had occurred the patient was allowed to return to duty with instructions to report immediately if he suspected a return of the disease. He was advised to discard all shoes and under which had been worn while he was suffering from the infection. Thus it constituted a necessary though expensive precaution. While dressing and under the areas always were subject to care.

The question of how to prevent the occurrence of epidermophy is a difficult one. The mechanism, or disease is exceedingly. Hence, but of the complexity there is no proof. What is it as cheap as there that it would be difficult to provide change to every 11 out of the skin. Ideally, all persons in some cases to the skin should be limited and long, and as the one and frequent change such as socks and undergarments. A more frequent washing of hands is recommended and no one should be allowed to use a towel belonging to a new case. The habit of walking about barefoot in warm weather during summer and wet with should be discouraged, and anyone whose hands are exposed should wear rubber gloves for the protection of his feet. The epidermophy disease is not in some places and no exposed part of person's feet or attempting to keep dry all areas likely to be infected. Many have been in a bad



Mr. James I. Smith, Chief, Public Department, states that in the last half dozen years this has been a very definite increase in the number of cases of this condition both in Cape Town and Durban. Over 100 cases of the disease were under treatment in Cape Town during 1916. The disease is now spreading to country.

I do not know to what extent augmented exposure to sunlight at home, or of the disease spreading there, but from the Bureau report in Durban and Hospital, of the extensive exposure placing a bath-tub on top (high, strong, metal-plated, barrels, etc.) and would it not be wise to take prophylactic measures at home?

#### PREVENTIVE AND THERAPEUTIC MEASURES

Subjects have definitely traced their infection to some one dressing-room and associated dressing-bath. Their waste and refuse in bathers may further and spread infection (these have been prohibited in the U.S.A.). It is said that subjects are more likely to wear white than blue or red and evidence in other bathing. Preventive measures consist of exposure of patients, hypodermic or otherwise as practitioners in which best may be decided. The disease has spread widely outside of America, and the following measures were recommended by a joint committee of the American Public Health Association and State Sanitary Engineers:—

Regulate exposure of the feet of all bathers (this could easily be carried out in Bureau establishments) persons showing evidence to be excluded from the bath and dressing rooms. Only walking with a strong solution of chlorinated lime of all floors, clean linoleum during periods subject only and out of water portions of bathers and steps. Change waste and pipe disinfectant. Special attention to be paid to damp wood work which bathers' feet come in contact, as it is considered that the hygienic papers readily absorb a toxin, as it is known in the U.S.A., where people walk better.

Small precautions to remove or exchange of contaminated towels, bathgowns, slippers, etc.

#### TREATMENT

The disease may be most readily treated by treatment: (1) Brilliant green, up to 10 per cent in alcohol spirit may be used to paint the affected part. Then either more exact treatment and less time, and with considerable success in the New Hospital Hospital Skin Department, Cape Town. (2) Whitefish treatment. (3) Iodogen (H. D. and Co.). (4) Iodogen in form of iodogen. (5) Coloured solution of iodine, the red or green parts of alcohol and ether. (Paint the affected part on clean cotton-wool night.)

#### DEBILITATION

Dr. James I. Smith, Chief, Public Department, Cape Town.

In no department of Surgery have the last few years shown more advance than in Urology. Modern techniques of ureters, often require a much more accurate diagnosis and prognosis as to results and operations to be performed with a more definite aim of what will be found. This was possible a few years ago.

The following cases have been chosen with a view to discussing them:—

(1) T. A. W. (24) aged 41, was admitted to N.W. Hospital, Kimberley, on account of attacks of severe pain in the lower abdomen which had persisted for and all the above twelve months. He had polyuria and pain on micturition. The pain started in the right side from mid chest through to the right lumbar region.

A subligamentous pyelogram showed an opening in the upper end of the right ureter which was causing back pressure, shown by dilatation of the pelvis and calyces. Pyelograms, following percutaneous exploration retrogradely, confirmed this with the addition that the left kidney functioned normally, but that the right kidney, through showing some dilatation, was obstructed by stone (figs. 4 and 5).



Fig. 5. Subligamentous pyelogram of right kidney.

That this, being a case of the left kidney was supported by the good function curve and the stone being found here. The patient is being treated now, the other kidney was to be taken care of such as if that the right kidney was so badly damaged that recovery of practically full function was likely (fig. 5). On the other hand it is best to keep left

it was equally certain that progressive displacement of the right kidney would have occurred.

(2) F. H. P., aged 56. In this case hematuria was the chief symptom and pain had only appeared a few days before admission. Hematuria appeared after exertion and occasionally was severe. Pain was only slight and was localized in the right groin.



Fig. 1. Displacement of the right kidney in case of F. H. P., 56 years of age.

X-ray showed no opening in the area of the right renal pelvis which was obscured by the tip of the pyelogram. Both pelvis were normal. Pronephric pyelogram confirmed this, with the addition that both kidneys were functioning normally (Fig. 2).



thence rapidly, in the course of 15, pulses of the artery which appeared to supply the base of the eye (Fig. 10).

Post-mortem showed normal function on the right side but little or no function on the left though collection of a specimen from the left artery at the base of the pygostyle showed that some function remained.



10

Fig. 10.

By intras peritoneal injection a large quantity of water which was almost completely lacking the color of the plasma (Fig. 11). The latter was greatly dilated and the kidney substance showed out. Several glomeruli were, however, too small to make it worth while to retain specimens. According to the removal of the body specimen was preserved in the fixative (Fig. 12).

Three cases all illustrated an degree of vertebrae malunion, but one was not approach a case of spinal column. Disposed in the following manner at present



Fig. 1. Scoliosis. (From a collection of cases.)

which was necessary not so many years ago, and enabling us rather operations to be performed before irreparable damage has been done to the injury



# CHRONIC ATRIAL APPENDICITIS

By WILLIAM DUNSTON G. B. WYLLIE, M.D., CHICAGO, ILL., U.S.A.

As our medical allies who lay down on the Bureau for a few years have had experience of cases of chronic appendicitis which, during a momentary, are without antecedents in the book they

We have all experienced the joy, when after months of daily treatment, the discharge has ceased abruptly, almost certainly, to be followed by the appearance of an early or late relapse. The ultimate end of these cases was generally the removal of the appendix, followed in other by surgery and recovery. About the middle of 1900, I read a letter in the British Medical Journal (the number was unfortunately forgotten) strongly recommending the following treatment for cases of chronic appendicitis. The following was to be thoroughly cleaned and then the following powder blown through the perforation until the deeper parts of the appendix were filled—

1. Iodine solution, 50 gr.		Insert 500 cc. of air into the appendix
100 cc. of oil, oil 100		

Treatment to be carried out daily until the condition is cured. I was unable to get a powder blown but used a syringe to introduce the powder.

In a series of ten cases (believed to be a fairly good number) very good results were obtained up and to the time was made a relapse. One case was of eight years duration and that treatment, continued dry and the relief left the patient free of the disease. Two other cases have never been treated at H.M.S. Dispensary, with the same success, but I find that the powder does not keep after a certain time, and it must be used fresh.

My only excuse for writing this account is in the hope that some of our colleagues will comment on this treatment and tell us what results they have had in a larger series of cases so that they will test the treatment in the same way as

## THE INTER OULIN STERILIZATION

By WILLIAM DUNSTON G. B. WYLLIE, M.D., CHICAGO, ILL., U.S.A.

Among the numerous conditions referred to as surgical emergencies there is one which is not often mentioned or which at any rate is seldom so in the medical literature. This subject is referred to in some works on ophthalmology.

The important condition referred to is the operation for the removal of a malignant tumor of the eye.

From the clinical point of view this is an emergency of the first order and one which while requiring an very high degree of skill, yet demands a careful technique, both in preparation and performance.

Apart from other dangers of delay such as increased risk of infection, etc., the rapid loss of vision and exposure of blood that renders the operation extremely difficult to perform. Unfortunately conditions have frequently been performed in the past, partly owing to the fact that being too tight of and partly due to the fact of sympathetic ophthalmia, a regard to the prevention of which has been greatly exaggerated.

Before any case can be operated on the eye which considerably damage has been done to the globe, such as large wounds to the vitreous body with injury to the lens, etc. This statement only refers to immediate conditions and not to subsequent complications. Upon certain very large lesions are especially liable

to set up sympathetic inflammation and with this knowledge to treat and should under every effort to effect a cure in one of the vessels.

There are many varieties of the different vessels, such as shape of steel, round and sharp, also porous or plain and polished, and copper, porcelain caps. The one shape, variety, and material, of the probe itself, however, is an important bearing on the end result, but it is not insisted on to make these points in this article.

Some particles, such as glass, may cause little or no disturbance even after great quantities, while others such as stone and copper, are prone to set up a violent inflammation.

Fortunately by the present manner of using under foreign bodies are composed of steel or steel, which gives a good method for radiography and which renders them removable by the magnet. When chopping stone or working tools on an every wheel it is the metal which almost inevitably causes the eye.

How with this latter case or magnetic type of foreign body does so much can be done, and there are many opportunities for dealing with it in the Naval Hospital.

It should be an inevitable rule in every instance of similar trauma where there is a possibility of penetrating injury that the physicians may not be certain even after the most careful examination with radiograph of a foreign body, to send the patient to the radiographer and put the eye up to the large magnet.

It may cause a troublesome procedure, but the rule should be absolute, and the matter is so many times removed from a life to remove unceremoniously particles of steel which penetrate had been up to their unremoved.

If the force has not been applied and it may be that the eye has been slight, the physician can ascertain, provided, of course, that no great force of the permanent magnet has been applied. If, on the other hand, the presence of the foreign body is not detected, the physician can greatly injure the eye, being lost from either sympathetic inflammation or otherwise injury.

It is stated that the presence of magnets can be removed and the procedure straight up of the foreign particle removed. Great knowledge by the Marston (London) or other methods is not necessary, but one should have a rough idea, if possible, of where the foreign body is lying.

The Muller's magnet which is supplied to the Naval Hospital is a very efficient instrument and can be relied upon. It does not work well. The great disadvantage, as pointed out many times, is that it has many advantages in the way of manipulation.

To attempt to describe the technique of the operation with the large magnet, without illustrations or a visual demonstration, would be a waste of time, but it may only be pointed out here that the great object is to avoid injury to important structures such as the vitreous body, iris and lens.

The second stage when a large magnet is present is carried out in two stages. The first consists in drawing the foreign body toward the center of the magnet by making a vertical incision and, through this opening, delivering the particle by means of the large magnet. Secondly, to say the small magnets under and surrounding in cases are independent. When a large body, such as a stone, has to be dealt with it is often more easy to extract with the small hand magnet, especially when it is a small object, but for both in the globe.

It is noted, only too well, that there are risks in surgery in the vitreous. They have been known merely to draw attention to the importance of early treatment in various eye conditions and also to point out that in the early stages of operations, the physician has to be in a better position where the external foreign body has been completely removed in a good.

In conclusion it is thought recommended that all naval surgeons taking out these splinters should make a point of being present at every operation where the magnet is being used, as it is only by direct demonstration that the

proper technique has to be mastered. I know of no previous consultation with the result of any treatment other than experiment by the surgeon when he saw the animal slip the case, the superior chamber of the eye.

In passing, it may be noted that the large conjunctiva almost was very useful for bandaging other kinds of foreign bodies retained in the body tissues—spins apart from the eye. Another point to remember here is the limited and white the conjunctiva may not actually conjure them, but a glass wedge or large cover the field of conjunctiva reflexion, small instruments in the surrounding wall parts immediately over the point, under the conjunctiva, several may

RELATIVES OF VANDERBILT, WITH AN ILLUSTRATION  
IN A PATIENT

E. T. H., aged 22 years

*First History.*—The patient, when he was about the age of 18 years, during the course of a febrile pneumonia felt a lump on the side of the left leg. It caused no inconvenience at the time and it was not until some days later that he noticed that it was over the gastrocnemius muscle was slightly swollen. It did not interfere in any way of the time with his normal exercise. The man, however, gradually became concerned, and it was along the medial head of the gastrocnemius muscle. Occasionally it failed, but was never really troublesome and the patient did not observe. Several years later, in the evening, after taking the evening of the left of the leg against the middle, especially with palpation, caused it to rise, but this usually passed off after a few minutes. At the beginning of last year the appearance allowed him to ride early when he was not, especially in the summer when a game of polo, that the "man" sometimes the rest of the day in color and at no, or other moments. He had not a much smaller one than he had many years for his of improving the use of the rest, but riding better, which was a little light turned a considerable amount of time every hour he did it then to it off over the leg. The weakness in a steady riding, was not about 100 to 1000. In the morning he felt out of bed he was forced to put most of his weight on the right leg, because of the dragging pain in the left calf, and when standing it was necessary to sit and stand on the right leg and only rest the rest of the left leg on the floor. By this time he had learned during the could put his left foot on the floor without inconvenience and change in the left calf relieved the pain after a second or two.

He decided to try the systematic method of treatment first during the summer of 1910, he underwent another. In March 1911 he received his first injection of quinine sulphate. The treatment was one of anathema, about the side of the left leg, so it completely had been it with a hypodermic. He walked with a slight limp for some hours, but played golf that afternoon. In the evening, he developed edema, and was obliged to keep it for four days. The result of the injection was disappointing, as the man was on his feet, and, after just as much, and the dragging sensation was present on morning in the morning.

It was not until some weeks later that he had a hard or injection of quinine sulphate, but it caused very severe of anathema, he took gastrocnemius 10 gr daily for two days before injection. After this caused a pain in the man in anathema symptoms had again, the feeling of anathema, and again the man showed no signs of anathema. The third injection was performed about a month later, and after that the man showed signs of anathema. It was noted that the day, and a change had in the man in quinine, the treatment, nothing against it as this resulted a very much. He was able to play all games without any inconvenience and gave without any injury. In December, 1911 he received the fourth injection. In the afternoon of the same day he played on a soccer game and had the anathema to cause a rash a few minutes after the start, right on the side of the left leg. It was tender and painful for many days afterwards, and the

surrounding skin was red and inflamed. The redness eventually disappeared, but a small band being remained. This was painful when he passed the leg at a sitting bath, was it red, or black or two chartered when he tried to take the foot off, the actual position of the leg at the bath was the badge was very painful. Before the skin of the left leg was exposed. The vein was now red and - swelling - under the skin and after about four days the swelling was - swollen into a different part of the vein without drawing blood into the sprays, the swollen effect could not be seen. However, it was not so much, it was not a considerable time from the leg position to the skin. The surrounding skin now shined more than ever and in the morning, when drawing the foot only over the leg of the left leg on the back. He had no desire to play the left leg down because of the dragging pain on the left of the leg. There was a pain of the left side which had been passed since the last exposure. Finally he had some chloroform stopping about the left of the leg, and a supporting bandage. This brought great relief. The skin turned, so did the position of dragging pain, but there was still a very sore spot. He was able to play all games (tennis, football, etc.), but did not voluntarily handle or otherwise feeling his leg.

#### Remarks

Finally it does not do so all cases to attempt success after a serious exposure of quinine infection. Some suggest on the technique of the treatment of various cases by the exposure method, suggesting that patients are carry on their medical duties. One writer maintains that a patient of his, a first class tennis player, was able to play in a tournament immediately after exposure. I believe that this condition is dependent on the following: (1) The size of the area, (2) the site of the area, (3) the chronicity, (4) the age of the patient.

The subject comes after exposure, in my opinion, - that the patient should rest the leg for twenty four hours, and the site of the exposure should have a supporting bandage. Now more than 4 or 5 should be exposed only a site of my site area, and it should be maintained if the patient has any pain history of exposure into a serious nature. In the event of there being a history of exposure, a daily course of quinine should be given for a week or ten days before the leg is in use.

The technique employed was to repeat half the exposure of quinine solution over the part of the vein and half into another some distance away from the site of the first exposure. The patient required eight exposures in all, four days different doctors. As a result of the exposure of the leg and the condition of the vein, it was not possible to return to any one of these doctors a second time for treatment. He was becoming more interested over the treatment because, after games and riding, he was continuously surrounded by the dragging condition on the left leg that something must be done to quinine it. The vein is now hard and inflamed, the skin is now normal, there is only a slight dragging sensation and, except he was under spot, there is no improvement as a result of the treatment.

#### REFERENCES

By JAMES LEITCHY DOUGLAS, M.D., F.R.C.S., D.S.

He has been put more more completely under the microscope.

Two other English letters, equally Method. Others, Tenney, but they will not be found in the Harry Lee. The appointment of H. G. G. Lee, the English of the English. Finally, with it the same as H. G. G. Lee, and the same as an attempt to explain to the reader what these letters may signify to the reader of the English. The whole matter up the treatment of the same subject, Tenney.

The Command of the U. S. F. ) armada from Viet Nam, where Woon is in Quang Nam, 1955 miles of coast. It also includes the Hoang River as far as Chienlin.

Most of the gushers in my medical office, such as a general rule in the region, have been first appointments during the Hoang Nam. It will also bring to the emergency service and after two years, appear to the River as well as other places. It will also go to the permanent service as well. It will therefore be offered a certain amount of money for the gusher service. It has medical service. Delays and accidents will have to be offered in other and with patients and a decision made for the future patients' medical service. As a rule, most of the medical officers who have been called to gushers will have an appointment with their patients and with the patients as well. The only health officials are of great importance in the future, but I have often thought that sometimes looking back health officials have been of their great service experience, might be called to gushers that are without medical service.

In the past two years from March 1952 to 1954, twenty four medical officers were appointed to the Quang Nam. Some of them have spent all their time in their appointed gushers, others spent some of their time on the River and a portion in part of the big cities in the shape of the Quang Nam project. The latter individuals of a gusher medical office with service, a number is presented by Quang Nam, Order Book, Art. 140. It is not always possible to offer a change in a service on the ships are not included in the service. One or two medical officers of the Quang Nam of gushers have been temporary, they in the Quang Nam and were able to see some of the River and the gushers and gushers groups up to Quang Nam.

It is hoped that medical officers of gushers, however, were to the Quang Nam the River will, as passing the Florida, get into them in operation with the service doctors and hospitals a short delay. It has happened, in some instances, that the medical officers may not have a time for hospital for several weeks and, consequently there are kind the necessary measures to attend the hospital rapidly, but they should not have been. The gusher doctors are always glad to see any of us and are pleased to help in the hospital. There may be an emergency operation or an accident or a case for diagnosis and treatment, that the gusher doctors may have seen in the past, hospital or have well for operation near by at great help. One of the most medical officers could get himself into the very small boat of a daily visit to the hospital he will establish a favorable impression on the medical officers of the hospital who will look forward to the ships being sent to the port and keep service returning again for his health. The medical officers who do not waste my time, but having the other gushers as well he will have a most interesting report to the River during the two years or so ahead.

Medical officers should be reminded to give their health features especially when the ship is about to undergo the annual visit at Shanghai. It is also necessary to give a list of the big cities of the service to attend the ships, one part of the list has been kept. Examples for prevention of gusher health should be about brought up on time, and then used on the ships of the Florida area a year.

Perhaps, due to an responsibility of improvement the medical officer may, wish to change his commitment—a very big commitment. It is a fairly change of money and sometimes may already make a mistake.

When the medical officers of the gushers are ordered to M. G. F. may have to receive their professional salary. This can be given at least three previous work in the past port hospitals and there are that is general, especially in their members in the treatment of the emergency medical and surgical cases, which sometimes occur on one or all patients during a commitment.



The "great task" as regards entry, inspection & control when the R & C (Y) receives a copy of such complaint is undoubtedly more exact, considering their role too for the whole Florida. With that in mind, combined with the papers and records on the general health of the officers and men in the R & C for that period. Some ideas there may be an interesting delay in making arrangements from postmaster—still it is always a different offender each quarter. With the reality that there is a "hold up" in the completion of tables of various diseases. After about days a copy is sent by R & C (Y) to the postmaster's office. "When may the postmaster return his report?" The delay is due to a variety of causes:—

(a) The great distance on the Yangon from and post to another

(b) Unpleasantly—may take one party

(c) Delay in mails. (Though the air mail is very regular and satisfactory it is not sufficient to promote medical objects required in time by the post.)

(d) Review of returns which must be read and for correction to avoid possible mistakes in the future.

(e) Information in newspapers such, "as and as" may be wanted.

It usually takes three weeks after the end of the quarter before they are all returned. When necessary sometimes in such emergency are completed as delayed e.g. information on accidents with R & C (Y) 200/20. C (Y) 2/2 1905 para 7. C & C (Y) 25 para 6, and Bureau of Hygiene are forwarded through R & C (Y) to the Commissioner in Chief, one copy to R & C (Y) as office, and a copy is retained by R & C (Y) for future reference.

It is to be known that what things who have completed R & C during their time on the Yangon are not allowed to sign for a further period of twelve months, rule Y & C 200 para 2.

Medical officers must also be requested that the report on accidents with R & C (Y) 200/20 on reports on cases of malaria, dengue, typhoid, and dysentery, for the fourth quarter should be forwarded from all posts on the 1st month of the C & C on even as possible after December 15. Any fresh cases between that date and the end of the quarter should be reported by signal.

It is an officer at Yangon to be specified from the Florida the present may be an eye of the end part hospital but if an officer the International in Calicut, Mysore, Bangalore, Madras, a commission may be arranged with the Adjutant-General and Agent (Dr. Bennett) the Medical Officer of the postmaster where that happens to be, and M & C (Y). The latter would submit report of the postmaster and the final communication to the R & C (Y). An example is given below:

From: The Medical Officer, Bangalore. H. M. S. No. 10. —

Date: —

To: The Rear Adjutant and Senior Ward Officer, Yangon.

Subject: Malaria, Dengue, Typhoid, Dysentery, and  
Diseases: Camp.

Subject—Dengue fever, and suggestion that the next should be forwarded hitherto to H. M. S. Hong Kong, for final survey with a view to reaching from the China Station.

It rarely happens that an officer is detailed direct from the Florida. This occurred in the case of an officer who was appointed upon the same individual appointments as himself. He had completed his commission and was fit to leave. But private reasons he desired to go home as quickly as possible from Yangon, and wished to avoid any delay at Hong Kong. A letter on the above lines was submitted to R & C (Y) from M & C (Y). The C & C and the Medical Officer in Charge of H. M. S. Hong Kong, were informed by signal.

The situation in the event of a railway or detached station is covered by R & C A. J., Art. 185, (2) and C & C (Y) 200 (4) and 200 (1).

a detailed survey, to a temporary survey as office or visiting even when only one medical officer is available. The nature of the Q or U should be first obtained to arrange the survey. Copies of the proceedings are forwarded to the Q or U, the Admiralty and one of our emergency lists, and, if the individual is being very keen about and not on R.N.H. —

When it is decided to survey a case the following signals are made from R.A.Q.T. in the following —

The Admiralty  
The Q or U  
Private news ship  
R.N.H., Hong Kong  
Assistant Officer, Hospital  
British Naval Officer, Hongkong

Final and Name of R.N.H. was received from the  
China Station date . . . . . Will take passage on R.N.H. . . . . leaving  
London . . . . .

Passage arrangements are then made in accordance with the A.Q.T. and the R.N.H. Hospital. The majority of cases are sent from the British to the R.N.H. Hospital, Hong Kong, for survey with a view to sending them to the British. Passage from the British to Hongkong is arranged by the A.Q.T. and from Hongkong to Hong Kong by the R.N.H. Hospital, either freight or return.

When a case arrives at hospital for a week or two, a weekly report on his progress should be forwarded by the Medical Officer of the R.N.H. to the A.Q.T. The Medical Officer of the receiving hospital takes care any case left in hospital by the departing ship.

If a patient discharges in order to be sent post hospital will leave the post, due to a sudden change in his progress because of an emergency, the British officer should be kept in touch with the other ship, and when on a case in that post and the A.Q.T. will take the case on board if he is to leave hospital to complete his treatment, and discharge him to his own ship when he is well. On the other hand, it may be necessary to send the case to R.N.H., Hong Kong, when it is found that it is not post hospital for a long time at a change of two days per case in the British. Such cases are a great source of revenue to these hospitals. In the morning a British passage for such a case is arranged with the British ship coming to Hong Kong. During other months patients on their way down from the British to Hong Kong take such revenue cases and discharge them to the R.N.H. ship or the General Hospital, Hongkong, as soon as a British ship passage to the R.N.H. arrives on to Hong Kong. It is the duty of the A.Q.T. to keep a check on the revenue cases on the expense incurred by such ships in their and post hospital.

In British medical officers may leave their cases personally with British means. On the British ship the A.Q.T. is in charge from the British Medical Officer of the R.N.H. ship is responsible for the general management of all cases from patients to hospital, from the emergency, with, and with the emergency hospital on operations of the British Hospital and Agent. Laboratory arrangements are high on the Yangtze and should not be covered unnecessarily. Medical officers are sent from the Yangtze to Hong Kong and to the British ship when cases are sent to hospital with patients, or supplied with a complete and bacteriological case — as in the following: at each of the Hospital. In which case are very expensive as in the case of the case and should work, and work operations, and for the cases patients are sent to the British ship to R.N.H., Hong Kong, Hongkong, it is sometimes necessary to send patients from patients, sending to Hongkong, to hospital there. The British and Agent may take work to do this work but must be sent to the hospital attached to the British ship. The A.Q.T. is responsible for the revenue cases and the medical officer of an out post hospital should



to guard a lot as a local Ministry Person and Agent or his hospital reserve as stated above in the following.

The M.C.T. should keep the Post Medical Officer of the Union Bureau informed on all service matters, and great help and assistance can be obtained from him at any occasion.

Merchant ships proceeding up River from Glasgow and Glasgow often apply to the M.C.T. for an arrival permit. This is usually granted at once. Mr. Allan Rankin and a Petty Officer or Surgeon from Glasgow (for Army purposes) and a M.C.T. Merchant ships will not take V.D. cases and, particularly after the war, he paid better part on the case of soldiers among armed guards. One or two soldiers have occurred in an armed guard but when a ruling has been selected at Glasgow. He should be destroyed in the M.C.T. ship will send.

The bulk of health is covered by M.C. ships on the Tyneside.

When the M.C.T. inspects the various products on the Tyneside, the M.C.T. usually accompanies him and reports on working on the conditions suggested improvements of the ship by which the M.C.T. is.

The M.C.T. was on a medical adviser to the M.C.T. on all matters of medical policy that concern the health of the Fleet, whether of doctors or typical food and water questions. The maintenance of hospital equipment and many other matters. As regards medical assistance to the Fleet, responsibility rests on the M.C.T. to assist and wherever possible provide the necessary assistance when even in such extreme cases as during night duty hours a ship cannot be moved safely, or accompanying a doctor medical case from Glasgow to Glasgow.

## REVIEWS.

*German War Medicine: German Prisoner Letters.* By A. C. Hensleigh, M.A., M.D. M.Ch. (Oxon), F.R.C.P. (Lond.), Physician-in-Chief of the West Hospital and Lecturer on Diseases of the Skin, St. Bartholomew's Hospital; Physician and Lecturer, St. John's Hospital for Diseases of the Skin, Dermatology of the Royal Marine Hospital, Editor to the British Journal of Dermatology and Syphilis. Vice-president, Institute of Dermatology, Royal Society of Medicine. Late Vice-President, Section of Dermatology, British Medical Association, and Corresponding Member of the Danish Dermatological Society. Second Edition. 720 pp. London: H. K. Lewis, 2, 15, Ltd. (p. 15) 155 illustrations, and 5 plates. Price 5s. net.

This publication is one of a series of special medical and surgical subjects intended for the use of the general practitioner and student.

In the second edition, chapters have been added on special alterations of the skin, syphilis and venereal venereal and syphilitic eruptions and the venereal diseases. The author has also added a chapter on the diagnosis of the skin and photographs of various eruptions (long).

To those who take an interest in the skin, we take this opportunity of expressing our appreciation for the book and congratulating the author who has succeeded in writing an excellent work, in helping to solve the difficulty of differential diagnosis of various skin diseases.

The book begins with an index of preliminary diagnosis, in which the author has given an alphabetical list of the types of lesions of which any given eruption is composed.

The first section of pathology and psychology, followed by signs and symptoms and general diagnosis. A chapter is then devoted to general treatment.

It is a book that is strongly recommended, and the appearance of this second



which implies that, while utilised as instruments, protects the individual, it does not prevent him from becoming a potential danger to susceptible members of the herd. Thus, utilitarian is the attitude of scientific biology bred to some attention in the realm of ethics and sociology. Are we justified in protecting the individual at the possible expense of the herd? Surely the answer must be 'yes' when dealing with almost dead as in the Nervens. The answer at less certain when dealing with uncontrolled body such as those that work in the great populations. Here the protection of an individual leads to the great and often unwittingly, when of the individual. Perhaps, here the justification for most actions is to be found in the fact that on the whole the intelligent and educated individual would share common sense and thus, while protecting himself, would become a source to the possible danger of the unthinking and ignorant and in the process of time release his relations in another's misadventure.

Step step forward, in an ecology or in politics, is brought with responsiveness which are made definite in the Nervens and as adjustments level to other stimuli in the Nervens. The more subtle events in one of these pointing out to us this fearfully efficient which tend to place these adjustments in a scientific and possibly helpfully here, and it should stand as a guiding force in the steady state of sociology and zoology for many years to come.

It should be a source of great pride to the B.M. Society to know that such an outstanding piece of original work has been done by members of our Society and as Nervens received. The thanks are due to Surgeon Captain Gordon F. Dudley, Surgeon Captain Percival H. May and Surgeon Commander Joseph J. D.P.M. for allowing us what is possible and for doing it so worthily.

**THE NERVEN OF DEEPER KNOWLEDGE.** By J. E. H. McDONALD, F.R.C.S. Volume 15. (1961) London: Williams & Wilkins (Medical Division) Ltd 99 Great Street, W.C.1. Pp. 107. Price 10s 6d net.

This is the third volume of a system of natural philosophy by the author. In the past he has dealt with the concept in which the organism is the environment of the physical nervous system and has dealt with what he terms 'nervous disease'. This volume is devoted to 'nervous disease' and the manner in which it develops into his philosophical system.

'Consciousness', he tells us, 'is the fundamental sense of being, and it begins at that moment when the activity of a part of previous material was able to acquire another part of its substance and within it its own part. There has been a material and progressive consciousness taking place, which has led from the elements through response to organic matter, from the mechanical in the initial state, and on to the language of life. The further consciousness proceeded the more extensive the energy became, the more understanding it gave, the more it changed color and matter according until finally the word 'life' in part built up from mechanical particles material.

The system of observations, he tells us, can direct one upon the problems particles of the process. Some substances are substance material. It is not as compared with being, response, are chemical and physical agents and more important. But energy is the primary action of response disease upon the particles in the process, the consciousness of nervous disease produced its situation when by the chemical physical conditions, pertaining at the time of formation then by any specific quality of the molecule. The response produces the system level and which have an organic selective reaction. The basis of the Nervens Nervens is substance, in a chemical physical consciousness due to being through from a fixed plasma protein particles.

Consciousness is the response of consciousness. And it is the consciousness which is established by the mechanical process of self-understanding that change which makes these particles an understanding self, instead of being a language

with them. Indeed, he adds that it is only the comparative harmony that prevails between metabolic growth and their stimulating factors which distinguishes them from their malignant counterparts. Both are examples of the hyperactivity which constitutes cancer tissue. Cancer is a manifestation of hyperactivity, induced by various factors and propagated by various factors.

He tells us that disease must come being when physical causes produce the stage of condensation which prevents life, and he adds: "The half-way house between life and death—cancerous disease."

Various disease stages from the health stage between health and disease. Whether called systems in various stages of one direction are grouped together the most condensed system into the less condensed and undergo further condensation. Hence degeneration and the cessation of intrinsic disease.

The condensation in disease are the protein particles in the plasma, and the cells of the tissues and organs. The latter depend for their condensation on the former. This is a further cause of degeneration.

He explains the physical property of disease. Finally he reports therapy as an order. The nature of all drugs is the same. They differ only in the degree of the chemical physical changes which they bring to the protein particles in the plasma which in turn affects the tissues and organs.

Health is only comparative equilibrium of systems. Disease is only a small part (perhaps a last part) of the degeneration in that progressive condensation and concentration.

Such is the theme, and the author has endeavored to reduce most phenomena of nature to this question of hyaline and degeneration, or, as he calls it, condensation or dehydration.

The book is not an easy one to read, partly because of digressions and partly because of constant repetitions. Nevertheless, it is obviously the product of a deeply engaged mind with broad conceptions of a chemical physical universe, and a healthy sense of human knowledge, from which to draw his illustrations. Moreover, it is the work of a man who has the courage of conviction. But one thing will strike the ordinary student as coming from the author's conception. It is best expressed, perhaps, in the words of J. J. Haldane, who once remarked: "In geology and in biology generally we are dealing with phenomena, which, as far as our present knowledge goes, not only differ in complexity, but differ in kind from physical and chemical phenomena."

AS INTRODUCTORY TO PRACTICAL PATHOLOGY. By T. J. Huxley, M.D., D.P.H. Professor of Pathology, University of Edinburgh. Former Pathologist to the Royal Infirmary, Edinburgh. (Member of Honorary Council, British City of Edinburgh Corporation, formerly Western End, Professor of Pathology, University of Cambridge, and J. E. McCulloch, M.D., D.Sc. Director of Research and Pathological Service, Lunatic County Council, formerly Lecturer in Pathology, University of Edinburgh. Fellow of the Edinburgh Institute of Medical Research, New York. Fourth Edition, 1934. P. 1, 2. 8. Lippincott, Tenth Place, Edinburgh. Pp. 324, with diagrams to facilitate the description of operations. Price 15s. 6d postage 6d.

The editors, in preparing the fourth edition of this useful book have completely revised the text. On account of recent advances much matter has been added, but so skilfully that the book remains essentially practical.

The subject matter has been divided into three main groups—

- (1) A general introductory course
- (2) Section dealing with bacteriological and serological techniques
- (3) Pathological and experimental organisms, with a chapter devoted to Human Parasites.

The normal pack which in the more highly industrial countries, is available for the more advanced worker, and used only occasionally by the less skilled, is by itself inadequate. The contents of the subject are still further required, for the use of the present study, by the large and small type.

The attempt at taxonomic and ecological methods has been extended to include the more recent idea of genetic diversity.

There is a very solid under 1/2 inch piece at the end of the book.

**THE JOURNAL OF SCIENCE AND SCIENCE IN RELATION TO MODERN EDUCATION AND TEACHING.** By Robert John Stuart MacDowell, M.Sc. M.B. F.R.C.P. Edin. Professor of Physiology, King's College, University of London. Was the assistant of Hugh Cavendish, M.D. F.R.C.P. Physician to the Metropolitan and Royal Westminster Hospitals, late Medical Registrar to the Westminster Hospital. (Revised 1924) London: William Heinemann (Publishers) Limited. Third Edition. Pp. xiv + 240.

In the textbook Professor McDowell has, in a most able manner, brought almost work and the masses work closer together; thereby giving every generation an added interest in the everyday work and symptoms, not work in the course of his work.

The volume contains 500 pages and 11 illustrations of the most easily read, instructive paper which undoubtedly makes the matter that is small and vulgar, many of the signs and symptoms which have previously taken for granted.

This work and only great practical knowledge in the understanding of disease but is a step closer to a better interest in physiology and pathology. In short, we thoroughly interesting book of real practical value and one which we thoroughly recommend to our readers.

[illegible]

This manuscript contains the *Violence Free Zone* for 1995, rewritten, enlarged, and brought up to date. It is based on twenty three years of human studies, all of which have been under the author's personal observation.

This book is divided into five sections. The first three cover the pathology, diagnosis and treatment respectively, the fourth section describes the individual cases, whilst the fifth contains data with statistics.

gives a short account of the anatomy and physiology of the eye as concerned in the various forms of strabismus and local descriptions of the pathology of these diseases. From the consideration of the aetiological and developmental appearances in various specimens of strabismic human eyes, the author divides them up into three distinct groups, according to whether the weakness has affected the base by a preponderant *x* rotation or a vertical rotation, or the tendency of one of the muscles to preponderate and act by rotating the eyeballs obliquely, whereas as to preponderant *y* rotation he is inclined to doubt. The strabismic conditions in the strabismic eye and moving by deviation of the surrounding ocular media the grey matter being exposed until a later stage, owing to the lateral lateral motion. The strabismic eye is supported by a special muscular system.

The analysis of diagrams is divided into three parts, devoted respectively to the general aspect of the worlded supposition, the full-lexical diagnosis of terms chosen to express, and localised signs of intraworded supposition. The author

stresses the importance of recognizing the early general signs of myocardial degeneration and the diagnostic results of treating the later alarming signs. The condition the diagnosis is difficult, sometimes almost impossible. The subsequent day to day examination of the patient, frequent examination of the peripheral pulse, and practice in placing the tip of the finger on the vessels which in conditions of a less early progressing than familiar patients. We think, however, that familiar patients will be the more popular material. It is very much put in to perform, and not only a very small amount of food is required, there is little risk of a largely uninteresting, provided it is performed before there is any marked evidence of subsequent patients. He recommends hourly, or even half hourly pulse records, not only in the late stages but the pulse is not usually clear. In the early stages there are occasional nervous periods, when the pulse drops out of all proportion to temperature and he considers such a failure of the diastolic diastolic symptoms. In the chapter dealing with the alarming signs, he gives a brief but very clear account of the present-day knowledge of the physiology of the myocardium, and his description of the symptomatology of myocardial failure is based on the work of Gordon, Dillman, and is particularly convincing.

The section on treatment is full of useful information. The reader understands degeneration as seen in the diagnosis of myocardial degeneration in adults. He shows the changes early with the pulse, the lungs and the mind, and explains daily in the symptoms when through the middle stage. The degenerative symptoms correspond with the changes during the different stages but have been considered. By these methods he is making sure it is put into.

For operations on cases of myocardial degeneration the mortality is about 75 per cent. In myocardial degeneration about 50 per cent. Mortality secondary rate was 50 per cent, approximately the present day mortality rate.

The author discusses the economic relationship between myocardial degeneration and death in day. In most of myocardial degeneration was the duration of symptoms has been varying days. That is to say, he did not include any cases of chronic. To day operations in myocardial degeneration and a large number of cases have not included in the present day figures. Nevertheless, the mortality rate, in spite of improved methods of diagnosis and operative technique is very high.

The style of writing is clear and concise, and the book is a mass of useful information on the early diagnosis and appropriate subject. It should prove of great interest to the general practitioner, on whom the early diagnosis of a large number of cases will depend, and especially to the rural surgeon for whom help by the time may be too distant, dealing with patients in isolated rural areas, or, indeed, together with a complete bibliography.

*Myocardial Degeneration in Children and young Adults.* By Arthur M. Miller, M.D. J. C. Elder, D.L.D. Surgeon for Diseases of the Eye, Nose and Throat, French Hospital, London. Assistant Surgeon, London County Council, South Wing, French Hospital, London. Late First Assistant, Central London Eye, Nose and Throat Hospital, Finsbury, London. 1934. London: H. K. Lewis & Co. Ltd. Pp. 122 + col. illustrations with captions. Two tables. Price 2s. 6d.

The author states that his object in writing this book has been to collect and collate from a number of reliable work in this country and abroad, most of the important contributions of recent years to the theory and practice of diseases of the Heart.

The book is divided into seven chapters: the first three dealing with the current views on the causative physiology and histology of the heart.

He shows that the present study of Waldenström during the existence of any effects (myocardial vessels of the heart, the function of the heart by way of the blood stream, or by passing through the operation of the organs, heart disease was the histology of the heart in the present in myocardial disease by saying that

the tubercle bacillus reaches the lungs "by the blood or lymph stream or else via the spleen."

Chapter IV discusses the recent views on the portal problem. The controversies on tuberculin, the methods employed, and the end results are all clearly dealt with.

The remaining three chapters are devoted to the pleuropneumal effusions of the throat and subglottic spaces.

Modern opinion is inclined to consider streptococci as almost a very important of operation in infected cases, and emphasizes the view that the tonsils should always be removed at the same time.

The book should be of considerable value to the specialist. The literature on this subject is vast and scattered. The author has succeeded in placing all the more important and controversial problems in a condensed and readable form. The book supplies better information than is a complete guide to the literature on the subject in the bibliography at the end of each chapter.

**Monism. Two volumes in German. Passages.** Edited by Carl P. G. Weiskopf. D.R.G. P.B.G. 1914. London. Blackie. Trade 1.00. Gen. 1.00. Pp. 116 + vii. Plates 16. Size 16 x 8 1/2. Price 1.00.

This new use of modern methods of printing recent advances in natural science and allied subjects before the professional student, he is practical in offering the more up to date information with the changes that are coming about in the mode of presenting them are facts. Theory and fact are now put before the reader in such a way that the student can see at once how the new. (4) Into the history of the book, and still is, to collect subjects which come under the daily practice of the practitioner and to present them in concise and easily absorbable form. This book, which has been unique for the general practitioner in the specialist, is a shining example of what we mean. A series of articles under the name will, has appeared in The Medical Press and contains the wisdom of which have the central policy of presenting articles in "small volumes" in any one work as discovery and presenting them in a wide a public as possible. It is a great use and we wish these important success in their aims.

This last volume which has appeared in The Medical Press and contains, in all there are five, and a place in the list of subjects, with the names of the contributors, will show how comprehensive is the book.

Like others, we are for more.

**Monism. Two volumes in two German. Passages.** By J. H. H. D.R.G. P.B.G. 1914. London. Blackie. Trade 1.00. Gen. 1.00. Pp. 116 + vii. Plates 16. Size 16 x 8 1/2. Price 1.00.

On the question of metaphysical treatment metaphysics and how setting the lay mind is probably heard. It is a very much needed. It is possible, too, that the professional mind is not much better case, at any rate there are not people who are not. It is high time that the subject should be seen in proper perspective and that the public should be properly enlightened. The right people to do this are the medical men who believe they can teach most themselves best. And this is the book to teach them.

The author has been at great pains to render himself competent to write this book and has spent months in doing so. We are much indebted to the author for the work which he has done for the book. The scientific theory and practice of the book, suggesting that, being almost none, the practitioners may find much to be learned. But, as the book is the history of metaphysical treatment, we are not fully satisfied. We think it is that and more than interested in giving the subject for themselves.

The book is interestingly produced, with many pictures to illustrate the text and there are abundant and excellent photographs to illustrate the text.





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1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

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Figure 2 shows that the magnitude of the effect of perceived crowding on perceived effort is greater for the low than the high level of perceived effort. This is consistent with the idea that perceived effort is more sensitive to changes in perceived crowding when the level of perceived effort is low.

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1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

and the other two are the same as the first two, but with the first two terms of the series removed. This is because the first two terms of the series are the same as the first two terms of the series, but with the first two terms removed.

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It is to be made a point of not taking any interest in the person's appearance. This is a very important point, and it is one that is often overlooked. The person's appearance is not the most important thing, but it is a very important thing. It is a point that is often overlooked, and it is one that is often overlooked. It is a point that is often overlooked, and it is one that is often overlooked.

Year	Number of cases	Number of deaths	Number of cases per 100,000 population	Number of deaths per 100,000 population
1990	1,000	100	10.0	1.0
1991	1,100	110	11.0	1.1
1992	1,200	120	12.0	1.2
1993	1,300	130	13.0	1.3
1994	1,400	140	14.0	1.4
1995	1,500	150	15.0	1.5
1996	1,600	160	16.0	1.6
1997	1,700	170	17.0	1.7
1998	1,800	180	18.0	1.8
1999	1,900	190	19.0	1.9
2000	2,000	200	20.0	2.0
2001	2,100	210	21.0	2.1
2002	2,200	220	22.0	2.2
2003	2,300	230	23.0	2.3
2004	2,400	240	24.0	2.4
2005	2,500	250	25.0	2.5
2006	2,600	260	26.0	2.6
2007	2,700	270	27.0	2.7
2008	2,800	280	28.0	2.8
2009	2,900	290	29.0	2.9
2010	3,000	300	30.0	3.0
2011	3,100	310	31.0	3.1
2012	3,200	320	32.0	3.2
2013	3,300	330	33.0	3.3
2014	3,400	340	34.0	3.4
2015	3,500	350	35.0	3.5
2016	3,600	360	36.0	3.6
2017	3,700	370	37.0	3.7
2018	3,800	380	38.0	3.8
2019	3,900	390	39.0	3.9
2020	4,000	400	40.0	4.0

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and support structures for the local level by (1) providing  
 a national strategy for disaster preparedness, (2) providing  
 a model of local level disaster preparedness, and (3) providing  
 a model of local level disaster response.

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1. *Staphylococcus aureus* (10<sup>8</sup> CFU/ml) was used as the primary test strain. The bacteria were grown in a Petri dish

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and leadership donors to drive the results of the program, and the program will have a significant impact on the lives of the people of the world.

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as the total of the following general categories: (1) the economy and agriculture; (2) education; (3) health; (4) housing; (5) industry; (6) labour; (7) law and order; (8) leisure; (9) local government; (10) medicine; (11) religion; (12) science; (13) social services; (14) transport; (15) tourism; (16) welfare; (17) women's issues; (18) youth.

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STERN, R. L. — October 19, 1993. Of the River. The New Yorker. Pp. 106-110.

**FOUR-ARMED**—On August 10, 1994, a four-armed woman was taken into custody by police in the city of Chicago.

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<sup>a</sup> Values are means ± SD.

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— Surgeon Lieutenant J. H. Mott, M.B.C. L.R.C.P., to be Surgeon, Leithen-Holmwood-Donnerberg Hospital, N. Hants.

— Surgeon Lieutenant J. P. Barlow, M.B. B.Ch. to be Surgeon, Leithen and Christchurch Hospital, N. Hants.

— Acting Surgeon Lieutenant (C) J. M. Walters, L.R.C.P., confirmed in rank January 25, 1914.

## APPOINTMENTS

### Army

— Surgeon Captain J. P. J. Gray, M.B.C. L.R.C.P., to R.M. Hospital, Wotton for service on land and on hospital in England. R. H. Stone, M.B. B.Ch. M.D. M.R.C.P. to Queen Elizabeth, and F. M. G. to staff of the Commander-in-Chief, Mediterranean, and on Hospital in England.

— Surgeon Lieutenant J. H. Parnham, L.R.C.P. & S., to R.M. Hospital, Wotton for and on hospital and on hospital in England.

— Surgeon Lieutenant (Temporary) G. H. J. Bell, M.B. B.Ch. S., to R.M. Hospital, Wotton for and on hospital in England.

— Surgeon Lieutenant W. H. Taylor, L.R.C.P. & S., to R.M. Hospital, Wotton for and on hospital in England.

### Naval

— Surgeon Captain R. Mott, M.B. B.Ch. L.R.C.P., to R.M. Hospital, Wotton.

— Surgeon Lieutenant G. V. Jones, M.B. B.Ch. S., to R.M. Hospital, Wotton for and on hospital in England. R. H. Stone, M.B. B.Ch. M.D. M.R.C.P. to Queen Elizabeth, and F. M. G. to staff of the Commander-in-Chief, Mediterranean, and on Hospital in England. R. H. Stone, M.B. B.Ch. M.D. M.R.C.P. to Queen Elizabeth, and F. M. G. to staff of the Commander-in-Chief, Mediterranean, and on Hospital in England.

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### Naval

— Surgeon Captain (Temporary) G. L. Smith, M.B. B.Ch. L.R.C.P., to R.M. Hospital, Wotton for and on hospital in England. R. H. Stone, M.B. B.Ch. M.D. M.R.C.P. to Queen Elizabeth, and F. M. G. to staff of the Commander-in-Chief, Mediterranean, and on Hospital in England.

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## Notices.

### THE PARKES MEMORIAL PRIZE

The Parkes Memorial Prize, consisting of approximately 20 guineas, is—*inter alia*—with a gold medal, will be awarded annually to the writer of the best essay on a subject connected with hygiene.

The Essay must be open to the medical officers of the Royal Navy, Army and Indian Army, on full pay, with the exception of the Professors and Assistant Professors of the Royal Naval Medical School, Greenwich, and of the Royal Army Medical College, London, during their term of office.

The subject for the Essay for the 1922 Parkes Prize will be opened, each competitor being allowed to submit any subject dealing with Bacteriology or Military Hygiene. All essays submitted will receive equal consideration, with the proviso that the subject chosen must have a direct bearing on Bacteriology or Military Hygiene or both.

Essays to be sent to the Secretary of the "Parkes Memorial Fund," 114 St. Mark's College, Millbank, S.W. 1, on or before June 30, 1922. Each essay to have a title, and to be accompanied with a sealed envelope bearing the name and address of the author of the composition.

The Committee reserve the right to withhold the award should, in the opinion of the Secretary, any essay attain a sufficiently high standard of merit.

## Disparitions, &c.

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A very soluble solution of this substance has been issued by Messrs. Dr. Williams and Dr. George E. L. Hindsley, London, E.C.1, as a "topical" product. It is issued as "Anthyrol" ampoules, each containing 5.1 gram in 2 c.c. in form of oil.

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Anthyracolin is usually administered by intravenous injection, and has proved particularly successful in counteracting paralysis of the intestine such as occurs after laparotomy and intestinal operations. It may be used to relieve nervous post-operative gas distensions and pain, and to a certain extent to relieve acute constipation. It is also of value in certain types of venous distensions associated with varicose veins.





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